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DO INSTITUTIONS MATTER FOR REGIONAL GROWTH AND DEVELOPMENT? THE CASE OF TURKEY

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Abstract

DO INSTITUTIONS MATTER FOR REGIONAL ECONOMIC GROWTH AND DEVELOPMENT? THE CASE OF TURKEY

Many cross-country studies acknowledge the indispensable role of institutions in promoting economic growth and in sustaining economic development. So, their emphases have shifted to determine the most influential institution(s) in order to be specific. While these papers are widespread in the recent literature, the role of institutions within-country level has not been yet discussed in detail. Although the formal institutional structures of many nation-state countries apply to their all regions, results may differ depending upon various conditions. Considering these differentiated outcomes, this study aims to discuss the roles and functions of institutions in regional economic growth and development. To that end, first objective of this paper is to provide an introductory background by surveying and systematically documenting the evidences on the impact of institutions on regional growth and development outcomes from both the theoretical and empirical studies within a voluminous literature. Second objective is to elaborate this survey by classifying these studies with respect to their different conceptions about "institutions" and to their methodological approaches adopted. By doing that, this paper try to propose an analytical framework that identifies the channels of influence between institutions and economic performance outcomes. As the main concern of that study, third objective is to discuss whether institutions really matter for regional economic growth and development and, if so, how can institutions be included in the regional growth and development policies. Turkey is a convenient example for this discussion. Although its fundamental written institutions have a countrywide validity, their density and quality varies among regions. So, lastly, it is planned to be done an empirical exercise to reveal the linkages between prominent characteristics of these regional institutions and economic performances of regions for the case of Turkey. To sum up, the novelty of this paper is to provide an extensive but a systematic survey of many studies in related literature and to contribute in part to the empirics of the relationship between institutions and regional economic growth and development. Finally, it is expected to obtain a sound understanding about the institutional approach both in economic growth and economic development spheres within the regional context.

KEYWORDS: Institutions, Growth, Development, Regional Economic Growth, Regional Economic Development

JEL CODES: O18, O43, R11

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List of Abbreviations

BERI: Business Environment Risk Intelligence

EIU: Economist Intelligence Unit

ICRG: International Country Risk Guide

GDP: Gross Domestic Product

GVA: Gross Value Added

NIE: New Institutional Economics

NUTS: Nomenclature of Territorial Units for Statistics

OIE: Old Institutional Economics

PRS: Political Risk Services

1. Introduction

Since the belief that institutions determine the incentives of and the constraints on actors of a society, and shape the economic, political and social outcomes has strengthened in the beginnings of 1990s, the study of the nature and role of institutions has become a central concern of economists and other social scientists.[1] The arguments about the role of institutions in promoting growth and development both in developed or developing countries[2] and as one of the fundamental determinant of economic performance differences across countries (Acemoglu and Robinson, 2008) have been started to be frequently discussed not only by the proponents of (new) institutional economics[3] but also by the followers of mainstream neoclassical economics. "*Although this view has a long history (Smith, 1776)*[4]*, it has experienced a recent major revival in the economics literature*" (Owen and Weatherston, 2007, p.142).[5] In parallel with these arguments, reforming the institutions ("getting institutions right")[6] has been a popular and dominant policy-making paradigm suggested in the receipts of policy advisers worldwide to solve the problems of countries with poor economic growth and development performances. But some questions in-depth about which institutions matter and how these institutions can be improved in order to promote further economic growth and development are still not completely and concretely answered in the literature. For the present, there are just some suggestions about what should *not* be done (Acemoglu and Robinson, 2008).

While underlying the significance of institutions in terms of economic outcomes, the fact that the economic institutions are not independently of a political process should not be overlooked. At the end, the political process is the outcome of social decisions taken by different groups and individuals benefiting from different economic institutions. So there are

[1] Garside (2007:1) argues that in part this belief reflects a preoccupation to establish the fundamental determinants of capital accumulation and innovation, and thereby long-term growth and development.
[2] See World Bank (1993, 1997), Stiglitz (1999).
[3] A full discussion of the literature surrounding new institutional economics exceeds the boundaries of this paper. For informative studies, see North (1995b), Vromen (1995), Clauge (1997), Williamson (2000), Touffut (2003) and Hodgson (2003).
[4] Adam Smith (1776) noted that private contracting (institutional quality) is an important prerequisite for the mutually beneficial exchanges that promote specialization, innovation and growth—the main factors leading to gains from trade (De, 2010).
[5] The role of the challenging theoretical work by Douglass C. North (1990) is worth to emphasize in revealing this view and in sparking renewed interest on the roles and functions of institutions. This study of North (1990) puts institutions at the centre of a discussion on the historical development of modern capitalism.

conflicts over these decisions and it is unsurprisingly they are concluded in favor of groups with have greater political power. This is why it is not an easy target to reform these institutions alone. Since the nature of political institutions and the distributions of resources determine the political power, in turn, it affects the performance of economic institutions. In sum, "*both political and economic institutions are essential parts of an effective institutional matrix*" (North, 1991, p.98). Frances sums this conjugate relationship between economic and political institutions in two sentences:

> *The role of political institutions in the creation of economic institutions means that economic institutions will not always be designed in ways that aim to maximize economic growth. However, the distribution of political power can change over time as the political and economic environment change and create an appetite for efficiency-enhancing change in economic institutions* (2004: 8).

So, this two-way interaction still makes it so problematic to reach an equilibrium point where the interests of political institutions and good economic institutions intersect. Moreover, "*the casual links between political and economic institutions and economic growth are still not entirely clear*" (Garside, 2007, p.3).[7] However, this relationship should be revealed for those who would wish to solve the problem of lagging countries by designing better policies, but, given these challenges between economic and political institutions, this study is centrally built around attempts to answer the question that how do institutions affect the performances of economic systems from the perspective of *institutions hypothesis*.

"*Institutions are established and accepted ways of getting things done in society, and include sets of norms, rules and procedures that define social practice and influence interactions*" (Garside, 2007, p.2). Among the various institutions fit to that general definition, the 'institutionalist' school in economics frequently emphasizes the importance of property rights, legal systems and the rule of law, land tenure, political stability, and other formal and informal social institutions (Engerman and Sokoloff, 1997, 2002; Hall and Jones, 1999; Acemoglu et al., 2001a, 2005a; Djankov et al., 2003). While emphasizing these institutions, institutionalists consider the most basic function (the major role) of institutions in

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[6] This phrase suggests an active voice in which, once correctly identified, the "right" institutions can be transplanted to replace the "wrong" institutions that currently are in place (Williamson, 2009, p.371)

[7] While the political power structure can affect economic growth by shaping a country's economic institutions, these in turn shape political power through their effect upon the distribution of resources (Acemoglu et al., 2005a).

a society as to reduce uncertainty by providing a stable (but not necessarily efficient) structure to everyday life, and so they all accept institutions as a guide to human interaction.[8] The reflection of these institutional effects on the performance of the economies shows itself by the costs of exchange (trade) and production. In other words, "*together with the technology employed, they determine the transaction and transformation (production) costs that make up total costs*" (North, 1990, p.3 and p.6), this is the way of institutions enter into the cost functions in an economy. Herein the role for institutions, "*in transaction cost terms, is to reduce transaction and production costs per exchange so that the potential gains from trade are realizable"* (North, 1991, p.98).[9] However, the neoclassical theory has defined a frictionless environment and neglected these costs and thus role of institutions.[10] According to that framework, the formal economic constraints or property rights are specified and enforced by political institutions, and the neoclassical literature simply takes those as a given (North, 1991, p.98).[11] Because it was previously felt that such institutions developed as a result of economic development, but the *institutions hypothesis* argues the converse situation which institutions are a causal determinant of growth and development.[12] Formally, the idea lies beneath this argument is that institutions which affect the context within which firms operate, such as the constitution and the rule of law which protect private property rights and prevent corruption, can be regarded as 'market creating' since they secure potential returns on investment and affect the scope for rent-seeking (Rodrik, 2003). So, after a while, neoclassical economic growth theory has come to a point that accept the institutions matter and admits the explanations of economic progress could not just only depend on inputs in the production process regarding the institutions are given. That means the integration of institutions to the neoclassical economic growth theory has gained pace over time.

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[8] In a nutshell, institutions define and limit the set of choices of individuals (North, 1990, p.4).

[9] For instance, firms face transaction costs when they are uncertain whether they will receive an expected outcome from an exchange. Institutions matter in this context because the rules surrounding the protection of assets held by a firm (including protection from expropriation by the state) and contract enforcement reduce such costs by encouraging investment in human and physical capital and by increasing the likelihood of expected outcomes (Coase, 1960; North, 1994; Aron, 2000 as cited in Garside, 2007, p.3).

[10] The theory is based on the fundamental assumption of scarcity and hence competition; its harmonious implications come from its assumptions about a frictionless exchange process in which property rights are perfectly and costlessly specified and information is likewise costless to acquire. Although the scarcity and hence competition assumption has been robust and has provided the key underpinnings of neoclassical theory, the other assumptions have not survived nearly so well (North, 1990, p.11).

[11] However, there are many examples in the economic history that failed to produce a set of economic rules of the game (with enforcement) that induce sustained economic growth (North, 1991, p.98).

[12] But although it is readily accepted that well-performing institutions are associated with economic growth, there is keen debate over whether they are always or necessarily the prime movers (see Easterly and Levine, 2003; Acemoglu et al., 2001a; Engerman and Sokoloff, 2003; Sachs, 2003b; Frances, 2004).

In the last two-three decades, much of the theoretical and empirical research on economic growth has followed a "production function" approach to explain variations in rates of economic growth and levels of development across different countries and across time. Following Solow (1956), this approach associates a country's aggregate output to the level of its inputs into the productive process. These well-known factors of production are simply physical capital (machinery, factories, and infrastructure), labor (the number of workers or hours worked), human capital (demonstrating the quality of human inputs into production due to level of education, on-the-job-training and health status), and technology (the knowledge about how to produce output). According to this point of view, growth of output take place due to the growth of inputs into the production process (particularly technological change and the accumulation of physical and human capital). However, these explanations and decompositions do not allow us to reach to the *real* underlying sources of growth.[13] It just tell us that the country A is richer than the country B, because the country A has a higher rate of physical capital investment and a more highly educated labor force (human capital), and uses these inputs more efficiently (technology).[14] But it does not answer to the questions that why has the country A saved and invested more than the country B and so accumulated higher levels of physical and human capital, or why does the country A use its inputs more efficiently than country B. Institutionalist simply answer these questions: "*this is because the factors of production mentioned are not causes of growth, they are growth*" (North and Thomas, 1973, p.2). In contemporary terminology, they are the *proximate* determinants of aggregate output, not *fundamental* causes (Acemoglu and Robinson, 2008; Pamuk, 2010).

To examine the "fundamental" or "deeper" determinants of economic growth and development, more and more explanatory variables have been incorporated into the models until the end of the 20th century. This search for deep determinants of investment, technology and efficiency, shortly of growth, has especially concentrated on relatively slowly changing, durable characteristics that have a pervasive effect on a country's economy over extended

[13] Moreover, some authors, such as Garside (2007), argue that the time has long passed when explanations of economic progress could focus only on inputs into the production process and the aggregate production approach which stressed the need to raise the ratio of investment to income as the means of quickening the pace of self-sustained growth has been found wanting.

[14] There are also some cases that this relationship is not seen in an expected way. As stated by Clauge (1997), although both physical and human capital accumulation are important, there is ample evidence of countries

periods of time. "*These include a country's geography, the quality of its institutions, the extent to which it is integrated into the international trading system* (economic policies)*, and a society's culture, reflected in its attitudes, beliefs and values*" (Owen and Weatherston, 2007, p.139).[15] There is a debate about the relative importance of each in terms of their contribution to economic growth, but there is general agreement that well performing institutions are associated with economic growth (Frances, 2004, p.2).[16] Nevertheless, it is noteworthy to stress here that the literature comparing the relative importance of institutions and geography is considerably large.

After the belief that "*institutions are the underlying determinant of the long-run performance of economies*" (North, 1990, p.107), was printed into some economists' minds, then, the institutional factors have been frequently included, complementing the more traditional variables, into the both neoclassical and endogenous models of both theoretical and empirical studies. Then, the empirical evidence have started to suggest that especially the quality of institutions, through their influence upon the levels of investment and the regulatory, economic and financial environment in which firms operate, affects the level and growth of GDP per capita and the volatility of growth (Acemoglu et al., 2001a; Hall and Jones, 1999; Easterly and Levine, 2003; Frances, 2004; Rodrik et al., 2002). Although the evidence suggests that the quality of institutions has a robust and significant indirect relationship to growth via its effect on the volume of investment,[17] there are still some serious problems with data and methodology in the empirical studies exploring the relation between institutions and growth/development, especially in the cross-country econometric studies in addition to the absence of data for the within country studies (for details, see Section 3). Nevertheless, these studies are important as Aron acknowledged that:

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enjoying only modest economic growth despite having high rates of physical capital accumulation, and of others gaining little or no growth even when education has expanded rapidly.

[15] Institutions are seen as a deep determinant because they mainly change relatively slowly over time (Williamson, 2000) and because they affect the incentives to accumulate physical and human capital, and to innovate and adopt new technology, thus having an important effect on the proximate determinants of output (Owen and Weatherston, 2007, p.143).

[16] For instance, Easterly and Levine (2003) suggest that geography/endowments have played a determining factor in influencing the quality of land, labor and production technologies, and explain cross-country differences in economic development through their impact upon institutions.

[17] In particular, better quality institutions reduce red tape and rent-seeking activities and (more weakly) improve the efficiency of investment by enforcing well-defined property rights (Aron, 2000).

> *Evidences from global cross-country econometric studies are potentially important because the paucity and weakness of both macroeconomic and institutional data for many developing countries preclude robust policy interpretations on a country-by-country basis* (2000, p.99).

Considering the importance of institutions for the economic growth and development literature and underlying all these significant contributions of the institutional approach to economics, this study generally aims to discuss the roles and functions of institutions in economic growth and development. To that end, first objective of this paper is to provide a background by surveying and systematically documenting the evidences on the impact of institutions on growth and development outcomes from both the theoretical and empirical studies within a voluminous literature. Second objective is to elaborate this survey by classifying these studies with respect to their different conceptions about "institutions" and to their methodological approaches adopted. By doing that, this paper proposes an analytical framework that first analyzes how the concept of "institution" is defined and used in the literature, and second identifies various institutions classified in some studies. Then it briefly evaluate some quantitative and qualitative methods and the corresponding research techniques to link some measures of institutions with the known indicators of economic growth and development. As the main concern of that study, third objective is to discuss whether institutions really matter for *regional economic growth and development* and, if so, how institutions can be included in the regional growth and development policies. And lastly, it is planned to be done an empirical exercise to reveal the linkages between prominent characteristics of these regional institutions and economic performances of regions for the case of Turkey.

In order to try to achieve all these aims, the remainder of this paper is organized as follows. Section 2 focuses on the studies in the literature which present us the theoretical background and the empirical works. Then, Section 3 gathers the definitions of institutions from different sources and summarizes the methodologies used in the literature. In the fourth section, the linkages between the institutional structures and regional disparities are documented and discussed. Section 5 is devoted to make an empirical exercise in order to capture the linkages mentioned in the fourth section for the case of Turkey. Section 6 contains concluding comments and suggestions for further researches.

2. Literature Survey

This section aims to provide a survey of studies from both theoretical and empirical literature that explore the relationship between institutions and growth/development. First subsection tries to provide a theoretical background getting assistance from studies attempt to describe the theoretical approaches of institutionalists within the framework of economic analysis. Second subsection covers some empirical studies heavily interested with the relationship between institutions and cross-country growth differences as well as within-country studies considering regional economic performance disparities.

2.1 Theoretical Background

Among the various schools of economic thought, the institutionalist school of economic thought has been diverse and varied. Nevertheless, it can generally be divided into two major traditions as the "old" and the "new" institutional economics. The "old" institutional economy (henceforth OIE) is the American institutional tradition that evolved at the turn of the century,[18] associated with Veblen, Mitchell, Commons, and Ayres (Rutherford, 1994; Hodgson, 1998). It is often referred to as "the Veblerian tradition", although "*it does not represent a single well-defined or unified body of thought, methodology, or program of research*." (Rutherford, 1994, p.1). It has in fact included two different traditions; one with origin in Veblen's work and the other developed from Commons. Although there were important differences in their views, they shared a common antipathy towards neo-classical approaches and conventional economic models, which were criticized for their unrealistic assumptions and inattention to historical change (Sunley, 1996; Scott, 1995). The OIE "stressed that economic processes operate within a social framework that was in turn shaped by a set of cultural and historical forces" (Scott, 1995, p.2).

The "new" institutional economics (henceforth NIE) has evolved more recently. It can be seen as a revival and expansion of the institutionalist elements that for a long period had been neglected in classical and neo-classical economies (Rutherford, 1994). As with the OIE, it includes varied and disparate strands, including works of Williamson and North as some of the most known.

The NIE is critical of the OIE; defining it as *"descriptivist and anti-formalist, holist, behaviorist, and collectivist"* (Rutherford, 1994, p.4). As noted by Hodgson, however, "characterizations of the 'old' institutionalism as purely descriptive or anti-theoretical do not bear up to close scrutiny….. The early institutionalists addressed crucial theoretical issues." Particularly in the writings of Veblen[19] and Commons,[20] there is a strong emphasis on the importance and priority of the tasks of theoretical explanation and theoretical development (Hodgson, 1998, p.166).

The neo-Veblerians (OIE) on their hand makes the opposite criticisms of the NIE, portraying it as *"formalist, individualist, reductionist, orientated toward rational choice and economizing models"* (Rutherford, 1994, p.4). If it necessary to compare these two alternate traditions, while the NIE is following the "mainstream" economics, accepting the individual rational choice model[21] (Harrington and Ferguson, 1999; Rutherford, 1994), the OIE offers a broader view of institutions, more in accordance with institutional approaches advanced in sociology and anthropology. It places institutions at the centre of economic behavior, and does not only add "culture" and "society".

Also from the broader realm of social scientists, NIE has been dismissed on the grounds that it is based on neo-classical premises, and on the grounds that it applies a narrow conception of institutions. Institutions are mainly seen as political and economic regulations, functioning as constraints of the individual choice and activity. Institutions have the main function of creating predictable conditions by reducing uncertainty (Karlsen, 1999).

In the modern development literature two recent strands of (new) institutional economics have been influential. One is associated with the theory of imperfect information:

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[18] This earlier institutionalism had actually been dominant in economics departments in American universities just after the First World War (Hodgson, 1998, p.166).

[19] For example, Veblen (1899, 1919) was the first social scientist to attempt to develop a theory of economic and institutional evolution along essentially Darwinian lines (Hodgson 1993).

[20] In addition, Commons (1924, 1934) has been acknowledged as a major influence on, for example, the behavioral economics of Herbert Simon (1979) and even the "new" institutionalism of Oliver Williamson (1975).

[21] This is because as explained in North (1990: 5), defining institutions as the constraints that human beings impose on themselves makes the definition complementary to the choice theoretic approach of neoclassical economic theory.

the underlying rationale of institutional arrangements and contracts (formal or informal) are explained in terms of strategic behavior under asymmetric information among the different parties involved. This theory has been fruitfully used in modeling many key agrarian and other institutions in poor countries, which are seen to emerge as substitutes for missing credit, insurance and futures markets in an environment of pervasive risks, information asymmetry, and moral hazard. It started with the literature on sharecropping, then on interlocking of transactions in labor, credit, marketing, and land lease, on labor tying, on credit rationing, on joint liability in group lending schemes, and so on. For examples and overviews of the models, see the edited volumes by Bardhan (1989), by Nabli and Nugent (1989), and by Hoff, Braverman, and Stiglitz (1993).

The other school, associated primarily with North (1981, 1990) and Greif (1992, 1997), concentrates on comparative historical analysis of development processes (mainly in Western Europe and North America).[22] Generally, North has pointed to the *inevitable* tradeoff in the historical growth process between economies of scale and specialization on the one hand, and transaction costs on the other. In a small, closed, face-to-face peasant community, for example, transaction costs are low, but the production costs are high, because specialization and division of labor are severely limited by the extent of market defined by the personalized exchange process of the small community. In a large-scale complex economy, as the network of interdependence widens the impersonal exchange process gives considerable scope for all kinds of opportunistic behavior and the costs of transacting can be high (Bardhan and Udry, 1999, p.217). Greif (1994) examined the self-enforcing institutions of collective punishment for malfeasance in long-distance trade in the late medieval period and in a comparative study of the Maghribi and the Genoese traders explored the institutional foundations of commercial development.

Both of these strands of institutional economics have provided major insights in the micro-foundations of institutional arrangements in developing countries and in understanding of underdevelopment as an institutional failure. Both underline the multiplicity of equilibrium, given the strategic interactions that result in the institutions as equilibrium outcomes, allowing

[22] This is why North and Greif believe that institutions evolve incrementally, connecting the past with present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story (North, 1991, p.97).

for historical initial conditions and cultural beliefs (that coordinate agents' expectations) influencing the selection of a particular equilibrium. At the same time it is clear that the literature has barely scratched the surface of an as yet largely unexplored story in poor countries. Particularly lacking are theoretically-informed inductive historical analyses of institutional change (or atrophy) in these countries, of the kind that Greif has so incisively carried out for late medieval Europe.

2.2 Empirical Studies

A recent wave of influential empirical studies in the economics literature has attempted to identify the "fundamental" factors that underpin long-term economic growth and development and that account for such large differences in average living standards across countries. The key contenders are a country's geographical characteristics, the quality of its institutions, the extent of its integration with world markets, and differences in culture. Existing empirical studies have attempted to evaluate how much of the overall variation in per capita real income levels across countries can be explained by representative proxies for some or all of these factors and, because each has different implications for policy, to assess their relative importance (Owen and Weatherston, 2007, p.137).

In the empirical literature, the terms politics and institutions encompass a wide range of indicators, including institutional quality (the enforcement of property rights), political instability (riots, coups, civil wars), characteristics of political regimes (elections, constitutions, executive powers), social capital (the extent of civic activity and organizations), and social characteristics (differences in income and in ethnic, religious, and historical background).

The aim of this subsection is to provide an accessible critical overview of this literature, emphasizing the basic arguments that lie behind the econometric exercises and the various attempts to make statements about the relative strength of casual relationships. To that end, this subsection summarizes some of the important recent contributions to the empirical institutions and growth literature. Table 1 lists five widely cited papers in this literature, which are termed as 'Core Papers' by Pande and Udry (2005). These papers firstly use influential institutional quality measures or instrumental variables to address the endogeneity

of institutional variables. Then in Table 2, again following the terminology of Pande and Udry (2005), 'Papers Citing Core Papers' are described. These articles are the ones which at least cite one of the core papers and published in major journals. Herein this limited literature survey include papers with at least one cross-country regression which consider a measure of the country's growth performance as the outcome variable of interest and consist a measure of institutional quality as an explanatory variable.

As it was cited in the introduction, following Srinivasan (1995) and Lal and Myint (1996), Aron (2000) states that evidence from global cross-country econometric studies is potentially important because the paucity and weakness of both macroeconomic and institutional data for many developing countries preclude robust policy interpretations on a country-by-country basis. Moreover, by showing Africa as an instance, Aron (2000) argues that several cross-country studies of growth have found that the conventional factors of growth (labor, physical and human capital accumulation, and so on) do not fully explain Africa's experience and have turned to an institutional explanation. Therefore, following the Aron (2000), this subsection of the paper try to examine a range of influential studies in the heterogeneous literature on growth, development and institutions, both to obtain a better understanding of the linkages involved and to assess critically the strong claims made sometimes by the authors.

Mauro (1995) analyzes a data set consisting of subjective indices of *corruption*, *the amount of red tape, the efficiency of the judicial system*, and *various categories of political stability* for a cross-section of countries. The finding of Mauro (1995) is that the corruption lower investment, thereby lower economic growth. By using an index of ethnolinguistic fractionalization as an instrument, author argues that his results warranted to be robust to controlling for endogeneity.

Knack and Keefer (1995) aim to quantify the relationship between institutions, investment and growth using indicators provided by country risk evaluators to potential foreign investors. These measures used by Knack and Keefer (1995), include *evaluations of contract enforceability, the rule of law, and risk of expropriation*. Using these measures, they found that institutions that protect property rights are crucial to investment and to economic growth, and when institutions are controlled for, stronger evidence emerges for conditional

convergence (that means rates of convergence to U.S. level incomes increase notably when these property rights variables are included in growth regressions). Additionally, they have also argues that these results are robust to the inclusion of measures of factor accumulation and of economic policy.

La Porta et al. (1999) investigate empirically the determinants of the quality of governments in a large cross-section of countries. They assess government performance using *measures of government intervention, public sector efficiency, public good provision, size of government, and political freedom*. They find that countries that are poor, close to the equator, ethnolinguistically heterogeneous, use French or socialist laws, or have high proportions of Catholics or Muslims exhibit inferior government performance. They also find that the larger governments tend to be the better performing ones. Finally, they argue that the importance of reasonably exogenous historical factors in explaining the variation in government performance across countries sheds light on the economic, political, and cultural theories of institutions.

Hall and Jones (1999) look for the sources of the variation in output per worker in their frequently cited paper. On an accounting basis, their analysis show that differences in physical capital and educational attainment can only partially explain the variation in output per worker, in other words, they find a large amount of variation in the level of the Solow residual across countries. At a deeper level, they document that the differences in capital accumulation, productivity, and therefore output per worker are driven by *differences in institutions and government policies*, which we call *social infrastructure*. They treat social infrastructure as endogenous, determined historically by location and other factors captured in part by language.

Acemoglu, Johnson and Robison (henceforth AJR, 2001a) suggest that the mortality rates among early European settlers in a colony (obviously related to its geography and disease patterns) determined if the Europeans mainly concentrated on installing resource extractive or plundering institutions there or decided to settle and build European institutions like those protecting property rights. AJR (2001a) use *mortality rates of colonial settlers as an instrument for institutional quality*, thus trying to avoid the problem of endogeneity of institutions vis-a-vis income.

All these authors find substantial differences in the measures of economic institutions, and significant correlation between these measures and various indicators of economic performance. Nevertheless, this type of correlation does not establish that the countries with worse institutions are poor because of their institutions. Consequently, evidence based on correlation does not establish whether institutions are important determinants of economic outcomes (Acemoglu and Robinson, 2008, p.3).

3. Definitions of Institutions and Methodologies to Measure

This section asks *two questions*: what is meant by the term "institutions" and how they are measured. In the first subsection of the following section, definitions of institutions from various sources are given and these definitions are elaborated presenting diversified classifications. In the second part, the measurement problem of institutions are discussed and different methodologies to tackle with these problems are given based on the empirical studies dealing with the impact of institutions on growth and development.

3.1. Defining Institutions

Douglass C. North introduced his seminal 1991 paper, namely "Institutions", defining the institutions as "*the humanly devised constraints that structure political, economic and social interaction*" (North, 1991, p.97). Then, he shortly juxtaposed the fundamental functions of institutions to emphasize their importance in terms of economic performance. By doing that, indeed, he extended his definition of institutions in an operational way. According to that, "*institutions have been devised by human beings to create order and reduce uncertainty in exchange*" (North, 1991, p.97). Most importantly, North (1991) argues that institutions (define the choice set and) determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity. As a result, that means, by the own words of author, "*institutions provide the incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline*".

This institutional framework drawn by North comprises both formal rules and informal constraints.[23] There is a continuum with unwritten sanctions, taboos, customs, traditions and codes of conduct at one end and constitutions, laws and property rights governing economics and politics at the other end. In an environment with absence of formal rules, a dense of social network leads to the development of customs, laws, trust, and normative rules that constitute an informal institutional framework (e.g., see Bates, 1989). Surely, these informal constraints are pervasive and crucial in modern economies too.

People in both rich and poor countries rely on informal institutions to facilitate transactions, but these institutions are relatively more important in poor countries where formal institutions are less developed. Moreover, poor people in developing countries are often ill-served by the limited formal institutions available. In poor countries, and poor regions in particular, informal institutions substitute for formal institutions. Countries and communities can go a long way towards resolving information and enforcement problems without using their formal public legal systems (World Bank, 2002).

Another crucial distinction made by North (1990) is between institutions and organizations. North (1990: 4) states that like institutions, organizations provide a structure to human interaction, but he adds that rules (institutions) must be clearly differentiated from the players (organizations). According to the author, organizations are groups of individuals bound by some common purpose to achieve objectives. For instance, they include political bodies (political parties, the Senate, a city council, a regulatory agency), economic bodies (firms, trade unions, family farms, cooperatives), social bodies (churches, clubs, athletic associations), and educational bodies (schools, universities, vocational training centers).

With the increasing specialization and the division of labor, societies became more complex, so the rate of return to institutionalization (forming political, judicial, and economic rules and contracts) raises due to their facilitator role in political or economic exchanges. These rules have also an interior hierarchy, generally, from constitutions to state and common laws, to specific by-laws, to individual contracts. In that hierarchical ladder, one in the higher is the more costly to alter. Williamson (2000) offers an alternative to a classification along the

[23] These institutions may be created or they may simply evolve over time (North, 1990, p.4).

formality of institutions, based on different hierarchical levels (1, 2, 3, and 4). Level 1 institutions are located at the social embeddedness level. Social norms, customs, traditions, etc. are located at this level. These traditional institutions often date back many centuries, are generally informal and can be regarded as exogenous to the economic system. This level is of utmost importance for people living in developing countries, where the other levels (II–IV) have only been partly established and/or do not function properly. Level 2 institutions relate to the rules of the game. Their main purpose is to define and enforce property rights. Most of them are formal institutions like conventions or laws, but examples also exist of informal institutions, e.g. rules governing access to natural resources, that are not written down but are quite strongly binding and therefore fit under this umbrella. In contrast to the institutions described in Level 1, the time horizon of a potential change is shorter. Institutions that relate to governance are classified as Level 3 institutions. These institutions craft order and reshape incentives, thereby building the governance structure of a society and leading to the building of specific organizations like the local or national government, state agencies, NGOs, etc. The time frame for changing and reorganizing transactions among governance structures is estimated to range from a few years to a decade. Finally, Level 4 institutions define the extent to which adjustment occurs through prices or quantities, and determine the resource allocation mechanism. Examples of this type of institutions are rules that are easy to change and that have an impact on resource allocation, employment, the social security system, etc (Jütting, 2003, p.12-13).

There is also a third way of alternative classification for institutions in the literature based on the differentiation between various areas of analysis. Economic, political, legal and social institutions are the four categories most commonly found in the literature. Under economic institutions, authors usually place rules that define the production, allocation and distribution process of goods and services, including markets (Bowles, 1998). Studies of political institutions usually employ variables that provide details about elections, electoral rules, type of political system, party composition of the opposition and the government, measures of checks and balances and political stability (Beck et al., 2002). Studies related to law and institutions refer to the type of legal system, the definition and enforcement of property rights and legal origin. Finally, studies on social institutions usually cover rules that have to do with access to health and education and social security arrangements, have an

impact on gender balance and govern more generally the relationship between economic actors (Jütting, 2003, p.14).

In most of the recent articles, institutions are defined in a broader sense, linking various different measures of institutional quality to development outcomes from various angles and disciplines. These measures of institutions are discussed in the next section.

3.2. Methodologies

The resurgence of the cross-country literature on institutions and growth is clearly linked to two factors. The first is the availability of comparable measures of institutional quality for a large set of countries, and second there is the use of instrumental variables techniques to deal with the endogeneity of institutions. However, the concept of 'institutions' is multifaceted and includes the working of markets, contract enforceability, bureaucratic efficiency, risk of expropriation, infrastructure quality, and repudiation of contracts by government; not surprisingly, such a broad concept is hard to pin down empirically. So, although this is a rich and active literature, it is with much debate about the suitability of empirical strategies adopted by the different papers, the validity of their identification assumptions and the relative magnitudes of the effects of different kinds of institutions on growth outcomes.

The empirical literature has adopted a variety of different measures of institutions.[24] The most common are survey-based assessments of institutional quality and/or government effectiveness collected over the 1980s and 1990s. Such measures are typically derived from sources such as the Political Risk Services (PRS) Group's International Country Risk Guide (ICRG), Business Environment Risk Intelligence (BERI), or the Economist Intelligence Unit, and are based on subjective assessments by experts of different aspects of the institutional environment, such as the corruption, law and order, and the protection of property rights.

For example, in their proxy for social infrastructure, Hall and Jones (1999) include a measure of government anti-diversionary policies (which includes data from the ICRG on law

[24] Researchers have used diverse measures, encompassing political instability, the attributes of political institutions, social characteristics, and social political, and measures of the quality of institutions that affect

and order, bureaucratic quality, corruption, the risk of expropriation and government repudiation of contracts). Acemoglu et al. (2001, 2002) adopt the extent of legal protection of private property and enforcement of such laws as a proxy for institutions. They use the ICRG measure of protection against expropriation risk of private foreign investment by government. Knack and Keefer (1995) also use this set of variables.

Another data set have been widely used to measure institutional quality is that of Kaufmann et al. (2002, 2004, 2005) who construct composite index of six different dimensions of institutional quality (voice and accountability, political stability and the absence of violence/corruption, government effectiveness, 'light' regulatory burden, rule of law, freedom from grant) from ratings by country experts (including the ICRG and BERI) and surveys. The Kaufmann et al. (2003) data on institutions are used, for example, by Rodrik et al. (2004) and Easterly and Levine (2003).

An alternative, and less commonly used, set of measures aims to capture the limits on executive power of political leaders. The primary data source for a measure of such constraints is the Polity IV data set complied by two political scientists, Jaggers and Marshall (2000). Some measures focus on constitutional or electoral rules, such as the 'plurality' and proportional representation variables constructed by Beck et al. (2002).

Glaeser et al. (2004) criticizes these measures of institutions at three points. One of them is that these three data sets measure outcomes, not permanent characteristics. They argue that all these measures 1) rise with per capita income, and 2) are highly volatile. So they conclude that both of these facts are inconsistent with the view that they measure permanent or even durable features of the political environment. Their second critic is about the first two measures. Accordingly, they emphasize to the point that these measures are constructed so that they lump dictatorships and democratic governments else together by making the same evaluations for the two system implementing good policies. However, Glaeser et al. (2004) points to the fact that dictators choose these policies freely, but others are constrained. So, according to authors, even if these measures are extremely useful indicators of policy choices, they are not constraints, hence they are unusable to discuss how specific constraints on

economic exchange. The literature on economic growth typically has classified and treated those proxies collectively as “sociopolitical measures” (Aron, 2000, p.103).

government would guarantee the security of property rights. The variables of Polity IV data set are similar for them, they show political outcomes rather than durable characteristics. Thirdly, they criticize the point that the institutional outcomes used by scholars as measures of constraints have very little to do with the constitutional constraints, and so they argue that this is raising doubts about the effectiveness of changing political rules.

These measures of the quality of formal and informal institutions indicate how effectively the existing institutional rules or norms are implemented. For example, subjective rankings of the effectiveness of property rights and of the bureaucracy (that is, the ease of doing business), which are often drawn from cross-country surveys conducted by abovementioned risk agencies, measures the quality of formal and informal institutions. These measures are actually the proxies for the transaction and transformation costs of production that may affect the volume and efficiency of investment and hence growth. But it is not easy to measure informal constraints. However, Putnam (1993) provides some measures for social capital that tries to capture the extent and the quality of civic activity and organization. Another example is the subjective Gastil index of civil freedoms. That index includes freedom of press and of assembly and try to catch the indirect effect of informal constraints on economic growth. Like this one, some measures of social capital reflect the ability of citizens to hold the state accountable.

4. Institutional Structures and Regional Disparities

Although there are lot of studies which argue that "the institutional fabric" or "the institutional setting" is crucial to the economic development of a region or a local community, there are few studies that dip deeply into the questions of what institutions are, how they are constructed and constituted and how they work to promote or constrain a successful restructuring process in a local setting. (Dale and Nilsen, 2000, p.1). To contribute into the fulfillment of this gap within the existent literature, this section of the paper aims to discuss whether institutions really matter for regional economic growth and development, in other words, this section is an analytical attempt to discuss whether an institutionalist approach in studies of regional growth and development is relevant, and if so, how institutions can be included in the regional growth and development policies.

Do institutions matter for regional economic growth and development? Until 1990s, this question has not been deeply questioned by either theoreticians, policy-makers or decision-makers dealing with development issues. Despite the fact that the role of institutions has been analyzed by social scientists for more than a century (i.e. Tönnies, 1887; Weber, 1920 and 1921), the linkage between institutions and economic development had been ignored by mainstream economic theory, in general, and by growth theory, in particular. Achieving economic development was seen as fundamentally a matter of investing in physical capital under the neoclassical growth theory framework (Solow, 1956). While explaining the differences in output and in the progress of economic growth, differences in the stock and in the level of investment in infrastructure were accounted as the key elements (Aschauer, 1989). With the development of the endogenous growth theory around the mid-1980s, the role of other two additional factors (innovation [Romer, 1986] and education [Lucas, 1988]) has been started to be discussed in the literature. Hence, the prescription to foster economic growth and development and to advance welfare levels is seemed to be apparent: greater investment in infrastructure, in education and training, and in promotion innovation and industrial activities are sufficient to generate greater economic growth and, ultimately, development in theory. And also, for the regional growth and development context, it is believed that if these investments were channeled to lagging regions, it would also contribute to disappear income disparities among regions and to provide economic convergence.

Strong national development policies based on the abovementioned principles were considered to have contributed to a substantial reduction in the disparities between rich and poor regions of especially developed countries. As it is highlighted by Amin (1999), "firm-centered, standardized, incentive-based and state-driven" regional policies based on the belief that "a set of common factors (e.g. the rational individual, the maximizing entrepreneur, the firms as the basic economic unit and so on)" lay at the base of economic success. As a consequence, regional development policies have remained very much embedded in the tradition of national development policies (Rodriguez-Pose, 2010, p.2). This is described as a tradition by Pike et al. (2006), which is firmly rooted in the belief that replicating top-down infrastructure, education, and industrialization policies, regardless of the local institutional contexts, would suffice to generate greater growth and promote economic convergence. The effect of institutions on regional development patterns was totally ignored by mainstream economic theory, instead it tended to assume that utility maximizing individuals satisfying

individual preferences would result in efficient and socially optimal outcomes. Regional development policies in the world following this theoretical framework over the last 30 years could not went further to copy development strategies of one another by adopting this top-down approach to development problems. But this approach have seemed to be adequate and logical at the time and so this neo-classical and endogenous growth approach to development had been tried and tested and had worked reasonably well.

However, this panorama has changed over the last two decades. Across the developing world, increase in within county regional disparities has accelerated sharply since the early 1990s. And so, economists have started to be disagreed on whether top-down regional development intervention across the world is delivering. Then, not only from economics, but also from a wide range of social sciences, researchers have initiated to analyze the role of institutions in order to have a better grasp of how economic development takes place. As Rodriguez-Pose and Storper (2006) mentioned, stubbornly high – and often growing – residuals in growth regressions have encouraged many scholars to look for additional factors that impinge on economic development and growth beyond traditional growth theories. At the end of 1990s and at the early years of 2000s, mainstream economists have increasingly come to the conclusion that the new "kid on the block", institutions, matter as much, if not more, for economic growth and development that long-established traditional factor-endowments, such as physical and human resource endowments, trade, or technology transfers (Hall and Jones, 1999; Acemoglu et al., 2001a; Vijayaraghavan and Ward, 2001; Rodrik et al., 2002). As is the case with both the theoretical and empirical studies that were mentioned in the second section of that paper, are now trying to understand which type of institutions matter. Among the formal institutions, the property rights and the rule of law have been identified as playing the most relevant role in generating sustainable growth (Rodrik et al., 2002; Acemoglu et al., 2005). Among informal institutions, trust (Knack and Keefer, 1997a; Knack, 2003; Beugelsdijk et al., 2004) and social capital (Putnam, 1993, 2000; Boix and Posner, 1998; Beugelsdjik and van Schaik, 2005) have, so far, attracted the greatest attention.

To sum up, if the previous returns from regional growth and development efforts adopting mainstream economic theory framework are controversial and contested, if the researchers have found that institutions matter more and more for economic growth and

development and if the regional development strategies should not overlook the institutional dimension, institutions should become an essential part of any regional growth and development effort in order to improve its effectiveness.

Before asking what are in fact institutions to refine the definitions mentioned in the third section and how they affect economic growth and development in the regional context, this section first continues to focus on the role of institutions in economic growth and development. At the end, this section will deal with how can institutions be introduced into the development policy-making process and what are the problems related to it.[25]

Now, the belief that the traditional development strategies are not universally successful and the regional disparities within countries continue to grow despite the government interventions in many parts of the world, is a worldwide phenomenon. So, the dominant thought is that many development initiatives concludes with the increasingly limited returns. Therefore, these traditional development strategies have been regarded as ineffective in today's globalized world. Particularly in the case of lagging regions, it is proved that "one-size-fits-all" approach does not work. However, while economists have attempted to look for the causes of the limited returns of development strategies and thus underdevelopment of lagging regions, the growing attention has been paid to the effects of institutions on economic development. North (1990), in his seminal book, accused the western scholars (economists, in particular) and policy-makers of ignoring and taking the role of institutions in ensuring the efficient functioning of markets and, consequently, in fostering development for granted. He argued that institutions are the underlying determinant of the long-run performance of economies (North, 1990, p.107). With going even further, Rodrik et al. (2002) said that the quality of institutions trumps more traditional development factors, such as trade or geography, in determining levels of income and growth prospects. Then both economists and other researchers from different perspectives have tried to establish linkages between "place-specific institutional structures" and "economic performance". For these researchers, institutions generate trust among economic actors and reduce transition costs (North, 1991; Fukuyama, 2000, p.1), provide collective goods (Streeck, 1991), foster transparency (Storper,

[25] Although this section posit that understanding local institutions is critical for the design and implementation of efficient development strategies, it will also argue that the introduction of an institutional dimension into policy-making is much less straightforward than it may at first seem.

2005, p.32), promote entrepreneurship, grease the functioning of labor markets (Giddens, 1990), adapt in the face of shocks in order to provide problems of solving arrangements (North, 1990), and ultimately lead to greater economic efficiency (North, 1992, p.479).

Especially in the regional framework, Streeck (1991) argued that specific local institutional arrangements enable localities and regions to embark on a sustainable and high-end road to economic development. In the same vein, Rodriguez-Pose (1999) argued that these institutional arrangements work better at the local and the regional scale, as the national scale can be too distant, remote, and detached in order to be effective in mobilizing organizations. Herein, the fundamental thought is that *adequate*, *solid*, and *efficient* institutions are essential for economic development at a local or a regional scale. Researchers dealing with the institutionalist perspective on the regional development, such as Woolcock (1998) and Amin (1999), argued that communities, localities, and regions with inadequate or inefficient institutions have, in contrast, a low probability of achieving sustainable economic development. Within this respect, Amin (1999) stated that institutionally *thin* environments often end up controlled by elites, resulting in "institutional sclerosis" and thwarting opportunities for sustainable development. And this institutional sclerosis spreads dissatisfaction and distrust in the local public policy-making process, driving local actors away from the development process as it is argued by Picciotto (2000). If this situation persists, within the terminology of institutional economics, if institutional "lock-ins" and "path dependencies" realize, they further contribute to generate a downward spiral of relative underdevelopment in lagging regions. That is to say, as Putnam said that, solid and efficient institutions are the key enablers of innovation, mutual learning and productivity growth (Putnam, 2000, p.325) and thus pave the way for the design and implementation of efficient economic development strategies across territories and, ultimately, for economic growth and development.

The next questions while arguing that the institutions matter are what are institutions and which institutions matter for development. These questions are important because while investment in infrastructure, education, or innovation tends to relatively easy to grasp, operationalize, and implement; however, the concept of institutions is more subjective, less clear, more controversial and, precisely for that reason, much more difficult to operationalize. Under most normal circumstances, greater investment in infrastructure, education, innovation

is likely to produce positive outcomes on the economic development of any given region. But aiming to remove institutional deficiencies is much more difficult to achieve, especially if the necessary institutions should have certain qualifications as "adequate", "solid" and/or "efficient". That means making institutions which ease voluntary and mutually advantageous exchange. So the following questions are how do we intervene institutions and how do we create "adequate", "solid" and "efficient" institutions. Before addressing these questions, we must first define what is understood by institutions in the regional context.

As it was largely mentioned in Section 3, the current literature is far from a consensus on a common definition of institutions. The mostly cited definition belongs to North (1990), which is *"the rules of the game in a society; (and) more formally, (as) the humanly devised constraints that shape human interaction"*. But this definition is not a universally accepted one. With the existence of multiple types of institutions, the problems with definition come into being a more complicated work. Nevertheless, most of the literature on the topic agrees with the two-tier division. According to that division, one part of institutions have been described as "formal" or "hard" institutions or "society", and the other part of institutions have been called as "informal", "tacit", "soft", or "community" institutions. More specifically, "formal" institutions can be regarded as universal and transferable rules and generally include constitutions, laws, charters, bylaws and regulations, as well as elements such as the rule of law and property rights and contract and competition monitoring systems (North, 1992; Fukuyama, 2000, p.6). Informal institutions consist a set of features of group life such as "norms, traditions and social conventions, interpersonal contracts, relationships, and informal networks" (Rodriguez-Pose and Storper, 2006, p.1) which are crucial for generating trust (Fukuyama, 2000, p.3). According to Fukuyama (2000), these informal institutions tend to arise spontaneously through repeated community interaction and prisoner's dilemma type decisions[26] and as a result of these interactions social capital accumulates.[27] Different researchers have focused on different types of informal

[26] Fukuyama (2000:1) also states that although social capital often arises from iterated Prisoner's Dilemma games, it also is a byproduct of religion, tradition, shared historical experience, and other types of cultural norms.

[27] Before Fukuyama (2000), while answering to the question what makes it necessary to constrain human interaction with institutions, North (1991: 97) states that the issue can be most succinctly summarized in a game theoretic context: Wealth-maximizing individuals will usually find it worthwhile to cooperate with other players when the play is repeated, when they possess complete information about the other player's past performance, and when there are small numbers of players. But turn the game upside down. Cooperation is difficult to sustain

institutional arrangements. Some of them have concentrated on *social capital* (defined as the features of social organization, such as networks, norms and trust) that ease the coordination and cooperation for mutual benefit in exchange. Others have concentrated on the role of *institutional thickness* as the driver of economic development. Amin and Thrift (1994) defines the institutional thickness as a "combination of features including the presence of various institutions, inter-institutional interactions and a culture of represented identification with a common industrial purpose and shared norms and values which serve to constitute 'the social atmosphere' of a particular locality". According to these authors, institutional thickness give institutions legitimacy, generate trust, increase the capacity of innovation, expand common knowledge, and help to embed economic activity in the local setting.[28]

Now it is time to describe how solid and efficient institutions foster regional economic development. Here, the point of departure is the idea that *markets are socially constructed* (Bagnasco, 1988). According to the institutionalists, markets are not the free floating phenomena as described in the neo-classical theory. Differently, they should be considered as social constructs made and reproduced through frameworks of socially constructed institutions and conventions (Pike et al., 2006, p.91). Hence, the functions of local and regional institutions go beyond just being simple regulators of economic activity. They become an important determinant of the level of economic activity and its efficiency. That is why there is a strong belief that local institutions promote growth and development through creating the necessary conditions for investment, economic interaction, and trade; and at the same time, reduce the risk of social and political instability and conflict (Jütting, 2003). As their principal functions, by lowering uncertainty and information costs, institutions smooth the process of knowledge and innovation transfer within and across regions and improve the conditions for the development of economic activity (North, 1990, 1995a; Vazquez-Barquero, 2002). Additionally, they shape the sets of incentives and disincentives that contribute to

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when the game is not repeated (or there is an endgame), when information on the other players is lacking, and when there are large numbers of players.

[28] Moreover, Amin and Thrift (1994) propose four factors contribute towards the construction of institutional thickness in a region. Firstly, there have to be a strong presence of a plethora of institutions of different kinds (including firms; financial institutions; local chambers of commerce; training agencies; trade associations; local authorities; development agencies; innovation centers; clerical bodies, unions, government agencies, business service organizations; marketing boards). Secondly, the institutions involved must have a high level of interaction amongst each other. Thirdly, this high level of interaction must result in clear defined structures of domination and coalition resulting in the collective representation of what used to be sectional and individual interests. Finally, a mutual awareness of being involved in a common enterprise or "script" has to be developed.

establish an "adequate" balance between coordination and competition among local economic actors, hence easing the learning process (North, 1995a). Both formal and informal institutions assist regions to adjust and react to change, creating a degree of "adaptive efficiency" that highlights the willingness and capacity of local actors to adopt new knowledge and to engage in innovative and creative activities (North, 1990). Moreover, according to Morgan (1997), institutions determine the learning capacity of any region more than any other factor.

In addition to the roles of institutions on the regional development, in a general sense, there are also some roles for the different types of institutions. In accordance with our previous division for institutions as formal and informal ones in that section, we will shortly discuss the roles of and the interactions between formal and informal institutions. For some authors, the weight of formal and informal institutions in generating development is not equal. Greif (1994) argues that community institutions may become a useful substitute to society institutions in circumstances of weak formal institutions, as in times of conflict or when trust in formal institutions has broken down. But for some other authors, formal and informal institutions are equal partners for the genesis of development and do not consider community-type institutions as auxiliary. To Amin (1999), a solid development strategy requires a balance between formal and informal institutions. On the one hand, formal institutions are essential as they provide adequate incentives for growth by minimizing risk, uncertainty, and corruption. As a consequence, they also facilitate efficiency in economic performance (Chakravarti, 2005, p.28). On the other hand, informal institutions can not only substitute for weak formal institutions, they are alone essential for the reduction of transaction costs, for rooting economic activity within any given region, and for enhancing local interdependencies, generating greater local economies of association (Amin and Thrift, 1994, p.230).

There can be also some regional settings which have not any solid and efficient formal institutions but have efficient informal institutions. These informal institutions can improve government efficiency and lead to greater economic efficiency as well (Boix and Posner, 1998, p.689-693). Besides, formal institutions can also contribute to the improvement of informal institutions. And these interactions between formal and informal institutions can help to account for the differences in growth and developmental patterns followed by diverse regions and territories (Haris et al., 1995).

Besides, many researchers working on the linkages between institutions and regional economic development have concluded that the *density* or *thickness* of local institutions is determinant on the potential outcomes of local and regional economic development strategies (e.g. Hudson, 1994; Amin and Thrift, 1994). These authors emphasize the regional institutional thickness due to their belief that it fosters the clustering of economic activities and stimulate entrepreneurship, so the success of cluster promotion is affected by the institutional thickness of the region. In a similar vein, Storper (1997) stressed the presence of *untraded interdependencies* to pronounce the fact that economic growth and development in a region depend on shared conventions embedded in the region through the positive externalities generated by local institutions.

Therefore, it is needed to consider the importance of institutions and to be more responsive to the needs of the local institutional environment while designing development strategies for lagging regions. This necessity does not end up with the creation of institutions. To make them work continuously and efficiently is critical to improve the economic efficiency and to get returns from interventions. Otherwise, the risk of failure always presents.

After we have agreed that institutions matter for the regional economic growth and development, last step is to discuss whether we can integrate institutions into the regional development policies and how. Since there is a strong belief amongst institutionalists that even the best development policy can be undermined by a poor institutional environment, here, some measures should be implemented for the improvement of institutional capacity for a given region.[29] However, there is little agreement about what improving institutional capacity and creating solid and efficient institutions really means and what to do in order to remove institutional inefficiency. As it was mentioned in the previous sections, there is also a lack of consensus as to whether institutions are a prerequisite or a natural outcome of growth and development. Due to its strong dependency on geographical conditions and historical past, it is hard to intervene in and affect institutions. At that point, literature proposes some factors that may affect the potential to intervene in institutional building.

[29] Aron (2000) states that if there is clear evidence that weak political and economic institutions significantly hamper growth, policymakers might propose measures that strengthen institutions in particular ways or that encourage more appropriate political structures.

First, the measurement problem. Rodriguez-Pose (2010) states that measuring what are adequate, solid, and efficient institutions is virtually impossible. Fine (2000) supports the argument of Rodriguez-Pose by drawing attention to a myriad of complex bilateral interrelations lie at the base of any institutional environment and he argues that these interrelations are affected by numerous context-specific factors, making local institutional constructs intangible.

Second, adequate and efficient institutions are context- and geography specific. Geography exerts a significant effect on the type and quality of institutions (Easterly and Levine, 2003).[30] What is a solid and efficient institutional arrangement in one region, does not necessarily mean a solid and efficient institutional in another (Chang, 2003). And this situation can be in reverse, in other words, different institutional settings can produce similar economic outcomes. So what are good institutional arrangements in one place may turn out to be bad in another.

Third, time also affects the role of institutions on economic growth and development. As Storper (2005) stated that as conditions change over time, what are good institutional forms at one stage are no longer appropriate at others. The adaptability of diverse institutional settings is therefore an essential characteristic of the efficiency institutions.

Fourth, while many institutional settings can adapt to time and move into new equilibria, some of them can simultaneously resist to transformations in the short-term. So short-term policy interventions may not be realistic to shape or transform all types of institutions.

Under these factors, nevertheless, there is a hope to insert institutions into regional development policies identifying the right mix – or density – of institutions. However, quality of institutions matters more than their density. As Hudson (1994) argued that the existence of local institutional thickness per se is no guarantee of local regeneration and development. On

[30] In considering the effects of geography, Easterly and Levine (2003) conclude that geography/endowments explain cross-country differences in economic development but only through their impact on institutions (Frances, 2004, p.3).

the other hand, the balance of formal and informal institutions is crucial. An excess of either formal or informal institutions may also be counterproductive for economic development (Rodriguez-Pose, 2010).

Another point with policy discussion is that the endogeneity problem. Institutional arrangements affect economic development, but also in part the outcome of economic development affect the institutional arrangements. So, institutions and economic development are mutually reinforcing (Boix and Posner, 1998; Rodriguez-Pose and Storper, 2006) and it is difficult to predict the direction of causality at any given time and in any given region.

Additionally, the relationship between the institutions and the diverse components of economic development (such as infrastructure investment, human resources, or innovation) is uncertain and ambiguous. As Glaeser et al. (2004) stated that the relationship between economic development may be more than bidirectional.

Consequently, the above discussion has made clear that institutions matter, but bringing institutions into the regional development policy is not an easy task. The problems with measurement, space and time variability, the difficulties for defining the right mix of formal and informal institutions, the endogeneity problem between institutions and development and the endogeneity problem between institutions and the components of development make it impossible to produce "one size fits all" type policy framework. Therefore, a region-specific approach is certainly necessary designing development policies, and especially putting the institutional components into these policies. In addition, regional development intervention should consider the need to promote the adaptability of local institutions to changing environments and conditions.

5. An Empirical Exercise

As it is summarized in Section 2, the cross-country literature on institutions and growth has successfully focused attention on the complex interactions between economic growth and institutional development. This literature has uncovered important correlations across countries between growth and the nature and quality of core set of economic, political and social institutions. It has also been careful in noting, and accounting for, the fact that institutions and economic growth jointly cause each other. A positive correlation between

'good' institutions and growth may reflect reverse causation; faster growing countries may have 'better' institutions because they can afford them. Faced with the statistical challenge of isolating causal pathways, authors have been extraordinarily inventive in identifying features of countries that are plausibly exogenous to the growth process, but that might influence the character of institutional development and thus might serve as instrumental variables. Therefore, Pande and Udry (2005) argues that this literature has served its purpose and is essentially complete. This is because, they think that the number of variables available as instrumental variables is limited, and their coarseness prevents close analysis of particular casual mechanisms from institutions to growth. Further, they emphasize the fact that instruments tend to be derived from persistent features of a country's institutional environment such as its colonial past limits their usefulness for studying institutional change.

After all, this suggests that the research agenda identified by the institutions and growth literature is best furthered by the analysis of much more micro-data than has been typically been the norm in the literature.

As it was mentioned at initial pages of the study, the main aim of this paper is to contribute to a better understanding of the concept of institution and to reemphasize the value of an institutionalist approach in studies of regional economic development. This motivation of that study sources from the economic theory in which there are many studies considering the relationship between the growth and regions on the one hand, and there are many other studies considering the relationship between the growth and institutions as have been frequently mentioned in that paper. So far, however, institutional and regional topics have been analyzed separately in the empirical literature, so that the interaction among regions and institutions is not explicitly treated in the studies. In the previous section, this paper have tried to deal with the two aspects jointly revealing the qualitative linkages between them.

Differently, this section of the paper aims to describe how economy-induced variation in institutional form within a country, for instance within Turkey, can be exploited to examine how specific institutions influence economic outcomes of regions within a country. An important advantage of that type of study is that information about how such change was implemented across regions in the country and/or difference in the regional

incidence of the policy can very often be exploited to obtain instruments for specific institutions.

The main research question of this paper is whether institutions matter in regional economic growth and development. To explore two important dimensions of this question, two hypotheses are tested. First one is whether the presence of some institutional structures does explain the growth and development disparities among regions in Turkey. Second one is whether the presence versus the quality of regional institutions does more account for the improvements in regional growth and development outcomes. To test these two hypotheses, panel data and analyses are employed.

The data sets used in the analyses are extracted from the regional statistics of Turkish Statistical Institute (TURKSTAT).[31] These data sets have been collected in NUTS level 1, 2 and 3 by TURKSTAT. For the purposes of the study done, data in NUTS level 2 for two time periods are analyzed, namely 2000-2001 and 2004-2006. This constraint in periods is due to lack of regional data in gross domestic products for all years. So, these figures are limited with the mentioned two periods.[32]

As it is abovementioned, panel regression analysis is used along the empirical parts of this study. Following and modifying the model proposed by Basu (2008), the model estimated in this section of the study is as follows:

$$D(Q)I_{it} = \alpha_i + \beta_1 I(Q)I_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

where, $D(Q)I_{it}$ is development (quality) index in region i at time t of the current sample, α_i is an unobserved time-invariant region-specific heterogeneity term, $I(Q)I_{it}$ is the institutional (quality) index; X_{it} is the vector of other control variables, and ε_{it} is a random error term.

[31] These data set are publicly available (http://tuikapp.tuik.gov.tr/Bolgesel/menuAction.do).

[32] While we can get the gross domestic product (GDP) numbers for 2000-2001 period, we have only gross value added (GVA) numbers for 2004-2006 period. In fact, TURKSTAT publishes the GDP numbers of provinces for the period between 1987-2001, but the number of total provinces in Turkey is under 81 up to 2000. To make an

There are two main factors behind the rationale of using this model. First one is about the extent of regional development. This study does not limit the measurement of regional development level with only regional gross domestic product statistics. Since the development is a broader concept than GDP growth, this study aims to consider the other dimensions of development, such as health, education and infrastructure. So the dependent variable is constructed as an index composed with these dimensions of development rather than being just a single value of growth. Second rationale is about the discussion whether quantities or qualities of institutions matter in development. This is an empirical question and this model used in this study propose to test this distinction, first, with using normal indices of development and institutions which reflect the quantitative side of this concepts, and second, with using quality indices of development and institutions which aim to reflect the qualitative side of this concepts.

Therefore, the variables will be used for the estimations are tried to be chosen considering these rationales. However, due to lack of regional studies in terms of statistical data gathering, the data set of TURKSTAT does not provide so many options while choosing these variables, it is so limited to work with regions. According the statistical division, Turkey is composed with 12 NUTS1, 26 NUTS2 and 81 NUTS3 level regions (see Figure 1 and Table 2 in Appendix 2 for these regions). To make an economic development comparison of regions for Turkey just with employing gross economic indicators, we are limited with two main indicators, namely *gross domestic product* and *gross value added*. However, data sets of TURKSTAT including these indicators do not let us to track their year-to-year movements. We have GDP numbers for provinces (NUTS3 level regions) for the period between 1987 and 2001. But these numbers do not include all the data of 81 provinces for the whole period. This is due to newly created provinces within time. We can reach the GDP data of all 81 provinces just with 2000. So our first period under investigation is composed only with years 2000 and 2001. These GDP data for these 81 provinces are aggregated into 26 NUTS2 level regions by using the statistical-regional division of TURKSTAT. The other problem is with the missing time series data. TURKSTAT does not give us regional GDP numbers after 2001. Moreover, after 2001, up to 2004, we do not have any macroeconomic indicator to compare the economic development of regions. With 2004, we have gross value added (GVA) numbers for

aggregation with the 81 provinces building for 26 NUTS2 level regions, we must constrain the data set with these time periods.

NUTS2 level regions. But unfortunately, these data only include the years 2004, 2005, and 2006. Again, after 2006, we have not any data until today. So in sum, our analysis is limited with only 5 years period (2000-2001 and 2004-2006) due to lack of consistent time series data for NUTS2 level regions. This was the data problem to find the numbers dependent variables.

The construction of independent variables is much more problematic. When we document the whole data set of TURKSTAT, we can find data under these main headings: general information (area of regions, number of municipalities, districts and villages), population and migration (general population censuses, address based population registration system, migration statistics), demography, building, education (primary and secondary education, higher education), culture, tourism, health, justice, environment, elections, agriculture, energy, labour force, business statics, transportation, foreign trade, prices and indexes, and purchasing power parity. At first sight, it seems very rich data set to construct appropriate independent variables, however, when we examine the contents of these data sets, usual disappointments start to appear. One of them is about the time inconsistency between dependent and independent variables. Majority of the data sets are recently gathered ones and do cover heavily the years after 2007. For the variables fixed in time, like the area of a given region, this is not a problem, but for the variables change in time this creates a time-inconsistency problem. Available years of data for dependent and independent variables do not match properly. This needs to a mandatory selection process among variables without full commitment to the model followed. Even worse, although we are able to construct a few independent variables for the period 2004-2006, we can't do it for the period 2000-2001. TURKSTAT data sets do not provide us any time-variant independent variables for that term. So, for now, our empirical exercise will be limited with only the period 2004-2006. Under these constraints, the independent variables available for the econometric analyses of that term are: openness,[33] the number of metropolitan municipalities, the number of parliament members, the number of parliament members in the ruling party, non-institutional population, working age population, labor force, the number of employed people, employment by sectors (agriculture, industry, trade, services), the number of unemployed people, labor force participation rate, unemployment rate, employment rate, the number of non-participants, public investments, the number of schools (primary and secondary), the number of teachers

[33] The openness indicator is constructed by the division of total trade to the gross value added for a given region. Although this is not a good indicator for trade openness, we should accept that it is better than its absence.

(primary and secondary), the number of classrooms (primary and secondary), the number of students (primary and secondary), the number of undergraduate students, the number of instructors (in higher education), the number of hospital beds, the number of health workers (doctors, nurses, etc.).

To test the hypotheses of this study, using the independent variables mentioned, the panel data estimations have been done for the period 2004-2006. Some of these independent variables are used to test the first hypothesis which investigates the significance of the presence of some institutional structures in revealing the economic development disparities among regions. Additionally, some other independent variables are derived to test whether the presence versus the qualities of these institutional structures matter to explain the regional disparities. The list of these independent variables and the results of econometric findings are presented in Appendix 3.

The detailed interpretations about the econometric findings will not given within the text. The results are given in Appendix 3. This is because the emphasize of this study is much more on the intuition rather than the numerical results of empirical findings. Moreover, our data sets do not give us an opportunity to make a concrete empirical analysis about these institutional concerns. They are just like the stock numbers in a firm and after all they are just *quasi-proxies* of some economic and social development indicators.

According to the results of this paper, it seems that institutions (economic, political, social) matter (significant) in regional economic growth and development levels of Turkey. Implicitly, the presence of some institutional structures partially explains the growth and development gaps among regions in Turkey. Additionally, the qualities of institutions does more matter than the presence of institutions.

6. Conclusion

This study is an attempt to understand the linkages between the institutions and economic performances in both cross-country and within-county settings. For this aim, first, the importance of institutions has been reemphasized outlining the studies consider the role of institutions in economic growth and development. These studies explored have different

methodologies. Some of them were just using the comparative historical analysis, some of them were employing the newly aggregated data sets both in the international sphere and in the sub-national levels and conducting empirical analyses to test whether institutions matter for the economic performances of the countries or the regions considered. Given the results of these studies in the theoretical and empirical literature, this paper has tried to reveal linkages between the institutions and growth/development. According to that survey, it has been concluded that 'institutions matter' for growth and development. But, however, the direction of causality isn't unidirectional. While countries or regions have good economic performances and so have high and sustainable growth rates afford to construct good institutions, other countries or regions with worse growth performances have not able produce good institutional settings due to other problems sourcing from low levels of development. This problem within the studies concerning about the role of institutions, nevertheless has not slowed down the pace of research in the literature. Contrary, many studies have newly initiated to consider the concept 'institutions' and according to their conceptions about the institutions, they have commented about various possible functions of institutions. One step further, these studies have tried to perform empirical studies to quantify the institutions and to test the hypotheses which argue the institutions are crucial in creating welfare in a given country or in a given region in the long-run. This was initially not an easy task. This is largely due to scarcity of data. Over time, some data sets have appeared in the literature. The majority of these data sets are considering the institutional quality of many countries from all over the world. The data sets were heavily constructed by rating firms which sells these data to the investors who are interested with the institutional quality of any given country they think about to make investments in the near future. So these firms have created data sets ranking countries according to their institutional qualities assessing from different viewpoints. But these sets could not refrain to being subjective in their analyses. This was actually normal. When we come to the analysis of institutions in the regional sphere, indeed we have not met with a different type of analysis. A limited number of countries which have some institutional quality evaluation in its internal regions, has been empirically analyzed to test whether the sources of regional economic disparities are institutions or not. Given the homogeneity of formal institutions across the regions within the countries, here the questions were generally asked about the informal institutions of the regions. Mostly emphasized term here was the social capital. Studies considering the regional differentiations within a given country mostly concluded that the social capital accumulation has created the economic performance

disparities among regions. Although some empirical results have appeared in the literature and in this study, for the policy implication, this paper and the other papers in the literature have been unable to go beyond to say that institutions matter and regional policies should consider the differences in the institutional structures of the regions in a given country.

Appendices

Appendix 1: Literature Survey

Table 1.a: Institutions and Growth – Literature Review (Core Papers)

Articles (CORE PAPERS)	Dependent Variables	Institutions		Key Results
		Measures	Instrument	
Acemoglu, Johnson and Robinson (2001)	Log GDP per capita (1995)	Protection against expropriation risk (1985-1995)	Settler mortality	One standard deviation (SD) increase in protection against expropriation risk (1.5) increases GDP per worker by 118% (OLS) and 309% (IV).
Hall and Jones (1999)	Log output per worker (1988)	Index of social infrastructure which combines: i. index of government anti-diversion policies ii. index of country's openness	I. Distance from equator II. English speakers III. European-language speakers IV. Predicted trade share	One SD increase in index of social infrastructure (0.25) increases output per worker by 128% (OLS) and 261% (IV).
Knack and Keefer (1995)	I. Annual GDP per capita growth (1974-1989) II. Private investment/GDP (1974-1989) (all averages)	I. ICRG index II. BERI index	No IV estimates	One SD increase in ICRG index (13.50) increases annual per capita income growth rate by 1.24 (OLS).
La Porta, Lopez-De-Silanes, Sheleifer and Vishny (1999)	Dependent variables are classified in five groups (data from 1990s): I. Interference with private sector II. Efficiency III. Output of public goods IV. Size of public sector V. Political freedom	I. Ethnolinguistic fractionalization II. Legal origin III. Religion	No IV estimates	A French legal origin country (relative to others) has 42% more infant mortality (OLS).
Mauro (1995)	I. GDP per capita growth (1960-1985)	I. Index of institutional efficiency	Ethnolinguistic fractionalization (1960)	One SD increase in index of bureaucratic

	II. Investment/GDP (1960-1985) III. Investment/GDP (1980-1985) (all averages)	II. Index of bureaucratic efficiency		efficiency (2.16) increases average growth of GDP per capita by 0.6% (OLS) and 2.3% (IV).

Source: Pande and Udry (2005)

Table 1.b: Institutions and Growth – Literature Review (Other Papers)

Articles (PAPERS CITING CORE PAPERS)	Dependent Variables	Institutions		Key Results
		Measures	Instrument	
Acemoglu, Johnson and Robinson (2002)	I. Log GDP per capita (1995) II. Urbanization (1995)	I. Current institutions: i. protection against expropriation risk ii. executive constraints in 1990 II. Early institutions: i. executive constraints in 1990 ii. initial executive constraints	Settler mortality	One SD increase in expropriation risk (1.5) increases GDP per capita by 118% (IV), controlling urbanization in 1500.
Acemoglu and Johnson (2005b)	I. Log GDP per capita (1995) II. Av. Investment/GDP (1990s) III. Private credit/GDP (1998) IV. Average stock market capitalization/GDP (1990-1995)	I. Contracting institutions: i. legal formalism II. Property rights institutions: i. executive constraints ii. protection against expropriation risk	I. Settler mortality II. Log of indigenous population density in 1500 III. Legal origin	One SD increase in expropriation risk (1.47) and legal formalism (1.24, using "check measure") together increase GDP per capita by 189% (OLS) and 523% (IV).
Aghion, Howitt and Mayer-Foulkes (2005)	Average growth rate of GDP per capita (1960-1995) relative to the United States)	I. Private credit II. Liquid liabilities III. Bank assets IV. Commercial-	I. Legal origin II. Settler mortality	One SD increase in private credit (0.28) increases steady-state GDP by 21% in

		central bank		Belgium.
Alcala and Ciccone (2004)	Log GDP per capita (1995)	Index of institutional quality	I. Settler mortality II. European-language speakers III. Predicted trade share (AC)	One SD increase in index of institutional quality increases GDP per capita by 35% (IV) (controls include log real openness)
Bockstette, Chanda and Putterman (2002)	I. Log output per worker (1988) II. Average GDP per capita growth (1960-1995)	I. Index of social infrastructure II. ICRG index	I. Distance from equator II. English speakers III. European-language speakers IV. Log predicted trade share V. State antiquity	One SD increase in index of social infrastructure (0.25) increases output per worker by 126% (OLS) and 229% (GMM IV)
Clague, Keefer, Knack and Olson (1999)	I. Annual per capita GDP growth (1970-1992) II. Output per worker (1988) III. Capital per worker (1988) IV. Years schooling per worker (1985) V. TFP (1988)	I. Contract-intensive money II. ICRG index III. BERI index	I. Colonial origin II. Ethnolinguistic homogeneity	One SD increase in contract-intensive money (0.14) increases growth by 94.5 (OLS) and 1.739 (IV), controlling for log GDP per capita in 1970.
Djankov, La Porta, Lopez-De-Silanes and Shleifer (2002)	I. Death from (i) intestinal infection (ii) accidental poisoning II. Quality standards (no. ISO 9000 certifications) III. Water pollution IV. Unofficial economy (i) size/GDP (ii) employment V. Product market competition	Number of different procedures that a start-up has to comply with in order to obtain a legal status, i.e. to start operating as a legal entity.	No IV estimates.	One SD increase in number of procedures (4.37) increases deaths from intestinal infection by 4.588% (OLS), controlling for log per capita GDP in 1999.
Esfahani and Ramirez (2003)	I. Growth of GDP per capita II. Growth rates of telephones and power production per capita	I. Adverseness of policy environment II. Indices of democracy and centralization III. Indices of contract repudiation,	No IV estimates.	One SD increase in contract enforcement (0.24) increases GDP per capita growth by 5.8% (OLS) (includes other institutional quality measures

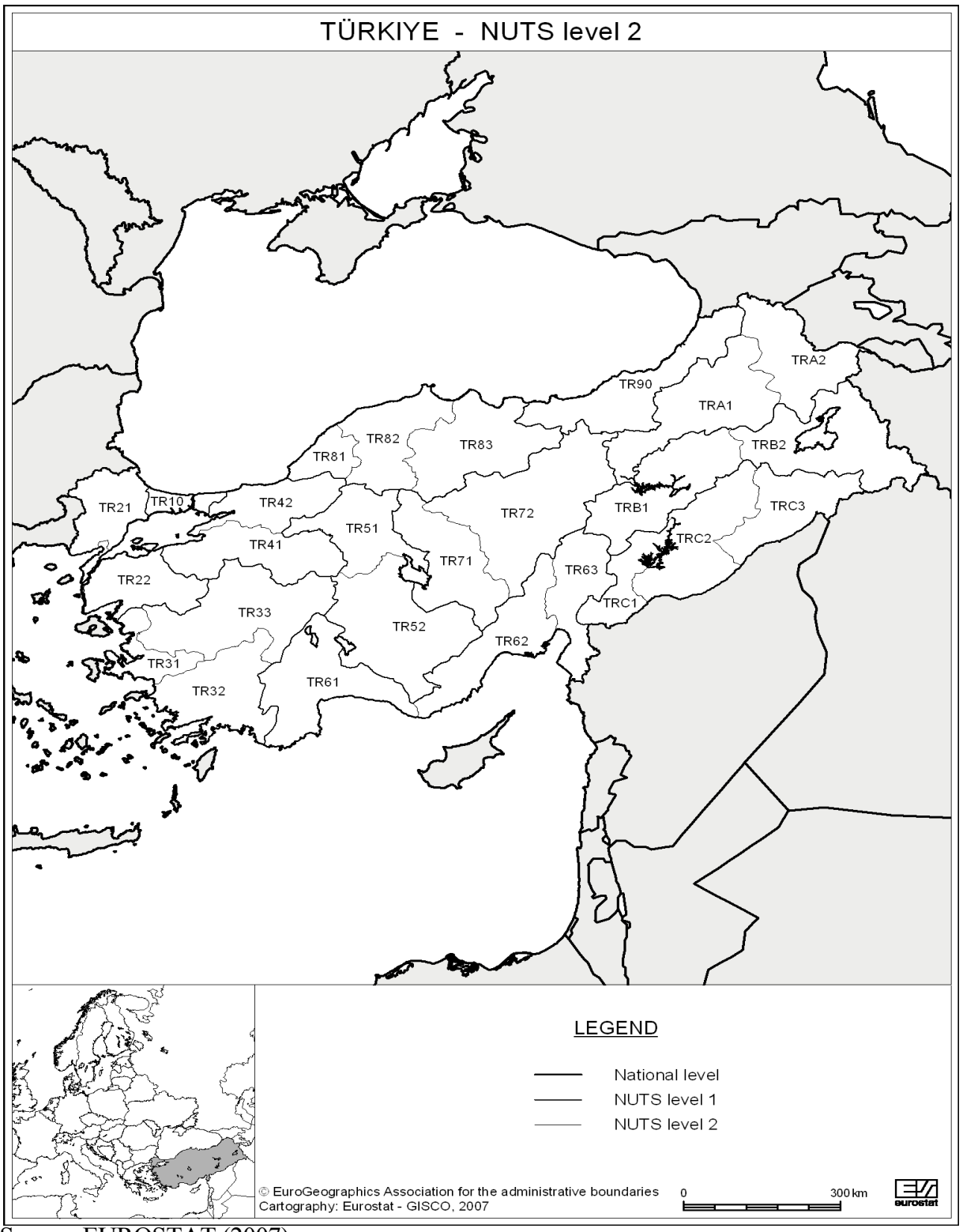
		bureaucratic quality and corruption IV. Ethnolinguistic fractionalization		as controls)
Glaeser, La Porta, Lopez-De-Silanes and Shleifer (2004)	I. Log GDP per capita (2000) II. Growth rates of GDP per capita 1960-2000, overall and by decade III. Years schooling IV. Political institutions (III and IV are 5-year change)	Executive constraints	I. Settler mortality II. Legal origin III. Log indigenous population density in 1500.	One SD increase in constraints on executive (0.185) decreases GDP per capita by 6% (IV), controlling for population in temperate zone (1995) and years of schooling
Jones and Olken (2005)	Change in annual growth rate of real GDP per capita comparing 5-year growth averages before and after leader deaths	Index of democratization	No IV estimates.	One SD increase in democratization increases annual growth by 2.1% (OLS) after the deaths of leaders in autocratic regimes
Knack and Keefer (1997a)	I. Average annual growth in per capita income (1980-1992) II. Investment/GDP (1980-1992)	I. Trust II. Civic norms (civic cooperation)	I. Ethnolinguistic homogeneity II. % Law students 1963	One SD increase in trust (0.14) increases annual per capita income growth by 1.1% (OLS) and 1.2% (IV) (includes other controls)
Kogel (2005)	Annual average growth rate of TFP (1965-1990, panel data of 5-year averages)	Index of social infrastructure	I. English speakers II. European-language speakers III. Predicted trade shares IV. Distance from equator V. State antiquity	One SD increase in index of social infrastructure (0.25) increases annual average TFP growth rate by 91.7% (IV), controlling for initial log TFP
Masters and McMillan (2001)	Log output per worker (1988)	Index of social infrastructure	I. Distance from equator II. Predicted trade share III. English speakers IV. European-language speakers	One SD increase in index of social infrastructure (0.257) increases output per worker by 680% (IV) for "tropical" countries (average

				frostdays<5 per month in winter)
Rodrik (1999)	Average dollar wages in manufacturing (1985-1989)	I. Political institutions: i. two rule of law indicators ii. two democracy indicators II. Labor market institutions: i. unionization rate ii. Number ILO workers' rights conventions ratified	I. Dummy for oil exporter II. Colonial origins III. Each measure of democracy as an instrument for the other	One SD increase in freedom house index (0.33) increases average dollar wages in manufacturing by 19.8% (OLS) and 37.62% (IV) (includes controls)
Rodrik, Subramanian and Trebbi (2002)	Same as Clague, Keefer, Knack and Olson (1999), except they use GDP per capita (1995)	Rule of law index	I. Settler mortality II. English-language speakers III. Predicted trade shares	One SD increase in rule of law index (0.94) increases GDP per capita by 112% (OLS) and 205% (IV), controlling for distance from equator

Source: Pande and Udry (2005)

Appendix 2: Statistical Regions of Turkey

Figure 1: Statistical Regions of Turkey (NUTS Level 2)



Source: EUROSTAT (2007)

Table 2: Statistical Regions of Turkey (NUTS Level 1, 2 and 3)

Level 1	Level 2	Level 3	
TR Turkey			
TR1 İstanbul	**TR10** (İstanbul)	**TR100**	İstanbul
TR2 West Marmara	**TR21** (Tekirdağ, Edirne, Kırklareli)	**TR211**	Tekirdağ
		TR212	Edirne
		TR213	Kırklareli
	TR22 (Balıkesir, Çanakkale)	**TR221**	Balıkesir
		TR222	Çanakkale
TR3 Aegean	**TR31** (İzmir)	**TR310**	İzmir
	TR32 (Aydın, Denizli, Muğla)	**TR321**	Aydın
		TR322	Denizli
		TR323	Muğla
	TR33 (Manisa, Afyonkarahisar, Kütahya, Uşak)	**TR331**	Manisa
		TR332	Afyonkarahisar
		TR333	Kütahya
		TR334	Uşak
TR4 East Marmara	**TR41** (Bursa, Eskişehir, Bilecik)	**TR411**	Bursa
		TR412	Eskişehir
		TR413	Bilecik
	TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	**TR421**	Kocaeli
		TR422	Sakarya
		TR423	Düzce
		TR424	Bolu
		TR425	Yalova
TR5 West Anatolia	**TR51** (Ankara)	**TR510**	Ankara
	TR52 (Konya, Karaman)	**TR521**	Konya
		TR522	Karaman
TR6 Mediterranean	**TR61** (Antalya, Isparta, Burdur)	**TR611**	Antalya
		TR612	Isparta
		TR613	Burdur
	TR62 (Adana, Mersin)	**TR621**	Adana
		TR622	Mersin
	TR63 (Hatay, Kahramanmaraş, Osmaniye)	**TR631**	Hatay
		TR632	Kahramanmaraş
		TR633	Osmaniye
TR7 Central Anatolian	**TR71** (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	**TR711**	Kırıkkale
		TR712	Aksaray
		TR713	Niğde
		TR714	Nevşehir
		TR715	Kırşehir
	TR72 (Kayseri, Sivas, Yozgat)	**TR721**	Kayseri
		TR722	Sivas
		TR723	Yozgat

Level 1		Level 2	Level 3	
TR8 West Black Sea		**TR81** (Zonguldak, Karabük, Bartın)	**TR811**	Zonguldak
			TR812	Karabük
			TR813	Bartın
		TR82 (Kastamonu, Çankırı, Sinop)	**TR821**	Kastamonu
			TR822	Çankırı
			TR823	Sinop
		TR83 (Samsun, Tokat, Çorum, Amasya)	**TR831**	Samsun
			TR832	Tokat
			TR833	Çorum
			TR834	Amasya
TR9 East Black		**TR90** (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	**TR901**	Trabzon
			TR902	Ordu
			TR903	Giresun
			TR904	Rize
			TR905	Artvin
			TR906	Gümüşhane
TRA Northeast Anatolia		**TRA1** (Erzurum, Erzincan, Bayburt)	**TRA11**	Erzurum
			TRA12	Erzincan
			TRA13	Bayburt
		TRA2 (Ağrı, Kars, Iğdır, Ardahan)	**TRA21**	Ağrı
			TRA22	Kars
			TRA23	Iğdır
			TRA24	Ardahan
TRB Middle East Anatolia		**TRB1** (Malatya, Elazığ, Bingöl, Tunceli)	**TRB11**	Malatya
			TRB12	Elazığ
			TRB13	Bingöl
			TRB14	Tunceli
		TRB2 (Van, Muş, Bitlis, Hakkari)	**TRB21**	Van
			TRB22	Muş
			TRB23	Bitlis
			TRB24	Hakkari
TRC Southeast Anatolia		**TRC1** (Gaziantep, Adıyaman, Kilis)	**TRC11**	Gaziantep
			TRC12	Adıyaman
			TRC13	Kilis
		TRC2 (Şanlıurfa, Diyarbakır)	**TRC21**	Şanlıurfa
			TRC22	Diyarbakır
		TRC3 (Mardin, Batman, Şırnak, Siirt)	**TRC31**	Mardin
			TRC32	Batman
			TRC33	Şırnak
			TRC34	Siirt
SUM	**12**	**26**	**81**	

Source: www.turkstat.gov.tr

Table 3: Regional GVA - By Kind of Economic Activity (2004-2006)

Statistical Region Level 2 /By Kind of Economic Activity		2004				2005				2006			
		Agriculture	Industry	Services	GVA	Agriculture	Industry	Services	GVA	Agriculture	Industry	Services	GVA
TR	**Türkiye**	**52.997.645**	**138.411.772**	**303.474.641**	**494.884.058**	**60.713.747**	**160.331.023**	**350.669.700**	**571.714.470**	**62.662.754**	**188.646.805**	**417.108.706**	**668.418.265**
TR10	İstanbul	516.413	39.722.501	97.206.711	137.445.626	584.429	45.767.765	110.391.695	156.743.890	552.211	53.490.114	129.769.948	183.812.274
TR21	Tekirdağ	2.039.616	4.069.217	6.293.006	12.401.839	2.215.329	4.883.715	7.752.412	14.851.456	2.218.415	6.007.980	9.453.452	17.679.847
TR22	Balıkesir	2.567.857	2.123.558	5.454.407	10.145.822	2.994.741	2.391.695	6.362.771	11.749.207	2.870.071	2.639.807	7.558.935	13.068.814
TR31	İzmir	2.007.842	10.164.121	21.294.693	33.466.656	2.028.801	11.520.529	24.576.688	38.126.018	2.418.970	12.741.178	29.216.505	44.376.653
TR32	Aydın	3.602.734	4.741.237	10.608.036	18.952.007	3.682.462	5.270.599	12.441.431	21.394.492	4.463.560	6.156.930	14.719.643	25.340.132
TR33	Manisa	3.873.883	5.510.971	7.814.625	17.199.480	4.491.608	6.455.603	9.345.744	20.292.956	4.711.300	7.849.837	11.359.216	23.920.353
TR41	Bursa	2.462.571	13.196.258	15.570.889	31.229.718	2.933.257	15.496.025	18.629.796	37.059.077	2.855.878	19.005.300	22.523.625	44.384.803
TR42	Kocaeli	2.365.149	12.021.659	14.561.576	28.948.384	2.718.672	13.524.813	17.637.365	33.880.850	2.937.668	16.185.419	21.705.728	40.828.815
TR51	Ankara	1.426.314	10.507.679	29.790.066	41.724.058	1.626.603	11.797.453	34.128.462	47.552.518	1.613.190	14.025.209	41.182.517	56.820.917
TR52	Konya	2.931.178	2.969.751	5.995.024	11.895.953	3.263.435	3.435.121	6.950.404	13.648.959	3.260.428	3.790.429	8.452.424	15.503.281
TR61	Antalya	3.140.996	2.835.729	13.449.844	19.426.569	3.600.394	3.558.050	15.635.144	22.793.587	3.996.228	4.157.114	18.394.493	26.547.835
TR62	Adana	3.491.006	4.629.543	11.999.922	20.120.471	4.347.767	5.394.126	13.675.025	23.416.918	4.466.842	6.307.753	16.405.820	27.180.415
TR63	Hatay	2.385.571	3.002.901	6.647.464	12.035.936	2.879.979	3.463.285	7.614.738	13.958.002	2.746.506	4.138.099	8.689.889	15.574.494
TR71	Kırıkkale	2.174.779	1.734.293	3.744.427	7.653.499	2.382.465	2.013.578	4.394.263	8.790.307	2.257.434	2.411.718	5.239.216	9.908.368
TR72	Kayseri	2.080.779	3.346.651	6.353.168	11.780.597	2.280.393	3.761.820	7.296.641	13.338.854	2.127.932	4.396.639	8.800.754	15.325.325
TR81	Zonguldak	502.223	3.047.038	3.977.042	7.526.303	546.768	3.683.786	4.738.624	8.969.178	527.181	4.140.785	5.716.985	10.384.952
TR82	Kastamonu	1.121.197	803.228	2.364.169	4.288.594	1.117.278	888.418	2.545.447	4.551.143	1.107.713	1.128.247	2.813.843	5.049.803
TR83	Samsun	3.166.803	2.739.924	8.020.840	13.927.568	3.515.703	3.275.726	9.241.580	16.033.008	3.575.303	4.081.432	11.011.962	18.668.697
TR90	Trabzon	1.840.518	2.711.613	7.868.751	12.420.882	2.729.056	3.317.324	9.128.554	15.174.935	2.986.636	3.619.881	10.782.765	17.389.282
TRA1	Erzurum	1.111.914	830.768	2.793.189	4.735.871	1.116.668	868.028	3.107.827	5.092.524	1.120.145	996.590	3.811.336	5.928.071
TRA2	Ağrı	1.167.669	401.283	1.816.996	3.385.948	1.210.050	533.473	2.143.688	3.887.211	1.227.654	616.795	2.549.662	4.394.111
TRB1	Malatya	1.045.234	1.443.290	4.278.373	6.766.898	1.510.032	1.638.535	4.823.576	7.972.143	1.317.021	1.843.698	5.652.436	8.813.155
TRB2	Van	1.232.822	878.473	2.953.030	5.064.326	1.512.998	1.058.483	3.388.596	5.960.077	1.519.596	1.112.819	3.869.902	6.502.317
TRC1	Gaziantep	962.451	2.344.792	4.728.023	8.035.266	1.347.796	2.805.284	5.497.972	9.651.052	1.473.843	3.339.710	6.326.373	11.139.925
TRC2	Şanlıurfa	2.731.977	1.490.874	5.131.863	9.354.714	2.936.917	1.707.333	5.875.127	10.519.376	3.089.800	1.941.369	6.995.904	12.027.073
TRC3	Mardin	1.048.149	1.144.420	2.758.507	4.951.075	1.140.145	1.820.456	3.346.131	6.306.733	1.221.227	2.521.953	4.105.372	7.848.552

Source: www.turkstat.gov.tr

Table 4: Regional GVA - Share of Regions by Sectors (2004-2006)

Statistical Region Level 2 /By Kind of Economic Activity		2004					2005					2006				
		Agriculture	Industry	Services	GVA	Rank	Agriculture	Industry	Services	GVA	Rank	Agriculture	Industry	Services	GVA	Rank
TR	**Türkiye**	**100,0**	**100,0**	**100,0**	**100,0**		**100,0**	**100,0**	**100,0**	**100,0**		**100,0**	**100,0**	**100,0**	**100,0**	
TR10	İstanbul	1,0	28,7	32,0	27,8	1	1,0	28,5	31,5	27,4	1	0,9	28,4	31,1	27,5	1
TR21	Tekirdağ	3,8	2,9	2,1	2,5	12	3,6	3,0	2,2	2,6	12	3,5	3,2	2,3	2,6	11
TR22	Balıkesir	4,8	1,5	1,8	2,1	16	4,9	1,5	1,8	2,1	16	4,6	1,4	1,8	2,0	16
TR31	İzmir	3,8	7,3	7,0	6,8	3	3,3	7,2	7,0	6,7	3	3,9	6,8	7,0	6,6	4
TR32	Aydın	6,8	3,4	3,5	3,8	8	6,1	3,3	3,5	3,7	8	7,1	3,3	3,5	3,8	8
TR33	Manisa	7,3	4,0	2,6	3,5	9	7,4	4,0	2,7	3,5	9	7,5	4,2	2,7	3,6	9
TR41	Bursa	4,6	9,5	5,1	6,3	4	4,8	9,7	5,3	6,5	4	4,6	10,1	5,4	6,6	3
TR42	Kocaeli	4,5	8,7	4,8	5,8	5	4,5	8,4	5,0	5,9	5	4,7	8,6	5,2	6,1	5
TR51	Ankara	2,7	7,6	9,8	8,4	2	2,7	7,4	9,7	8,3	2	2,6	7,4	9,9	8,5	2
TR52	Konya	5,5	2,1	2,0	2,4	14	5,4	2,1	2,0	2,4	14	5,2	2,0	2,0	2,3	14
TR61	Antalya	5,9	2,0	4,4	3,9	7	5,9	2,2	4,5	4,0	7	6,4	2,2	4,4	4,0	7
TR62	Adana	6,6	3,3	4,0	4,1	6	7,2	3,4	3,9	4,1	6	7,1	3,3	3,9	4,1	6
TR63	Hatay	4,5	2,2	2,2	2,4	13	4,7	2,2	2,2	2,4	13	4,4	2,2	2,1	2,3	13
TR71	Kırıkkale	4,1	1,3	1,2	1,5	19	3,9	1,3	1,3	1,5	20	3,6	1,3	1,3	1,5	20
TR72	Kayseri	3,9	2,4	2,1	2,4	15	3,8	2,3	2,1	2,3	15	3,4	2,3	2,1	2,3	15
TR81	Zonguldak	0,9	2,2	1,3	1,5	20	0,9	2,3	1,4	1,6	19	0,8	2,2	1,4	1,6	19
TR82	Kastamonu	2,1	0,6	0,8	0,9	25	1,8	0,6	0,7	0,8	25	1,8	0,6	0,7	0,8	25
TR83	Samsun	6,0	2,0	2,6	2,8	10	5,8	2,0	2,6	2,8	10	5,7	2,2	2,6	2,8	10
TR90	Trabzon	3,5	2,0	2,6	2,5	11	4,5	2,1	2,6	2,7	11	4,8	1,9	2,6	2,6	12
TRA1	Erzurum	2,1	0,6	0,9	1,0	24	1,8	0,5	0,9	0,9	24	1,8	0,5	0,9	0,9	24
TRA2	Ağrı	2,2	0,3	0,6	0,7	26	2,0	0,3	0,6	0,7	26	2,0	0,3	0,6	0,7	26
TRB1	Malatya	2,0	1,0	1,4	1,4	21	2,5	1,0	1,4	1,4	21	2,1	1,0	1,4	1,3	21
TRB2	Van	2,3	0,6	1,0	1,0	22	2,5	0,7	1,0	1,0	23	2,4	0,6	0,9	1,0	23
TRC1	Gaziantep	1,8	1,7	1,6	1,6	18	2,2	1,7	1,6	1,7	18	2,4	1,8	1,5	1,7	18
TRC2	Şanlıurfa	5,2	1,1	1,7	1,9	17	4,8	1,1	1,7	1,8	17	4,9	1,0	1,7	1,8	17
TRC3	Mardin	2,0	0,8	0,9	1,0	23	1,9	1,1	1,0	1,1	22	1,9	1,3	1,0	1,2	22

Source: www.turkstat.gov.tr

Table 5: Regional GVA - Sectorel Share of Gross Value Added (2004-2006)

Statistical Region Level 2 /By Kind of Economic Activity		2004				2005				2006			
		Agriculture	Industry	Services	GVA	Agriculture	Industry	Services	GVA	Agriculture	Industry	Services	GVA
TR	**Türkiye**	**10,7**	**28,0**	**61,3**	**100**	**10,6**	**28,0**	**61,3**	**100**	**9,4**	**28,2**	**62,4**	**100**
TR10	İstanbul	0,4	28,9	70,7	**100**	0,4	29,2	70,4	**100**	0,3	29,1	70,6	**100**
TR21	Tekirdağ	16,4	32,8	50,7	**100**	14,9	32,9	52,2	**100**	12,5	34,0	53,5	**100**
TR22	Balıkesir	25,3	20,9	53,8	**100**	25,5	20,4	54,2	**100**	22,0	20,2	57,8	**100**
TR31	İzmir	6,0	30,4	63,6	**100**	5,3	30,2	64,5	**100**	5,5	28,7	65,8	**100**
TR32	Aydın	19,0	25,0	56,0	**100**	17,2	24,6	58,2	**100**	17,6	24,3	58,1	**100**
TR33	Manisa	22,5	32,0	45,4	**100**	22,1	31,8	46,1	**100**	19,7	32,8	47,5	**100**
TR41	Bursa	7,9	42,3	49,9	**100**	7,9	41,8	50,3	**100**	6,4	42,8	50,7	**100**
TR42	Kocaeli	8,2	41,5	50,3	**100**	8,0	39,9	52,1	**100**	7,2	39,6	53,2	**100**
TR51	Ankara	3,4	25,2	71,4	**100**	3,4	24,8	71,8	**100**	2,8	24,7	72,5	**100**
TR52	Konya	24,6	25,0	50,4	**100**	23,9	25,2	50,9	**100**	21,0	24,4	54,5	**100**
TR61	Antalya	16,2	14,6	69,2	**100**	15,8	15,6	68,6	**100**	15,1	15,7	69,3	**100**
TR62	Adana	17,4	23,0	59,6	**100**	18,6	23,0	58,4	**100**	16,4	23,2	60,4	**100**
TR63	Hatay	19,8	24,9	55,2	**100**	20,6	24,8	54,6	**100**	17,6	26,6	55,8	**100**
TR71	Kırıkkale	28,4	22,7	48,9	**100**	27,1	22,9	50,0	**100**	22,8	24,3	52,9	**100**
TR72	Kayseri	17,7	28,4	53,9	**100**	17,1	28,2	54,7	**100**	13,9	28,7	57,4	**100**
TR81	Zonguldak	6,7	40,5	52,8	**100**	6,1	41,1	52,8	**100**	5,1	39,9	55,1	**100**
TR82	Kastamonu	26,1	18,7	55,1	**100**	24,5	19,5	55,9	**100**	21,9	22,3	55,7	**100**
TR83	Samsun	22,7	19,7	57,6	**100**	21,9	20,4	57,6	**100**	19,2	21,9	59,0	**100**
TR90	Trabzon	14,8	21,8	63,4	**100**	18,0	21,9	60,2	**100**	17,2	20,8	62,0	**100**
TRA1	Erzurum	23,5	17,5	59,0	**100**	21,9	17,0	61,0	**100**	18,9	16,8	64,3	**100**
TRA2	Ağrı	34,5	11,9	53,7	**100**	31,1	13,7	55,1	**100**	27,9	14,0	58,0	**100**
TRB1	Malatya	15,4	21,3	63,2	**100**	18,9	20,6	60,5	**100**	14,9	20,9	64,1	**100**
TRB2	Van	24,3	17,3	58,3	**100**	25,4	17,8	56,9	**100**	23,4	17,1	59,5	**100**
TRC1	Gaziantep	12,0	29,2	58,8	**100**	14,0	29,1	57,0	**100**	13,2	30,0	56,8	**100**
TRC2	Şanlıurfa	29,2	15,9	54,9	**100**	27,9	16,2	55,9	**100**	25,7	16,1	58,2	**100**
TRC3	Mardin	21,2	23,1	55,7	**100**	18,1	28,9	53,1	**100**	15,6	32,1	52,3	**100**

Source: www.turkstat.gov.tr

Table 6: Regional GVA - Per Capita Gross Value Added (2004-2006)

Statistical Region Level 2 /By Kind of Economic Activity		Per Capita GVA (TL)						Per Capita GVA ($)					
		2004	Rank	2005	Rank	2006	Rank	2004	Rank	2005	Rank	2006	Rank
TR	**Türkiye**	7.306		8.336		9.628		5.102		6.185		6.684	
TR10	İstanbul	11.481	1	12.902	1	14.914	1	8.017	1	9.573	1	10.352	1
TR21	Tekirdağ	9.164	6	10.734	5	12.504	5	6.399	6	7.965	5	8.680	5
TR22	Balıkesir	6.474	10	7.455	10	8.248	10	4.521	10	5.531	10	5.725	10
TR31	İzmir	9.385	5	10.541	6	12.099	6	6.554	5	7.821	6	8.398	6
TR32	Aydın	7.600	8	8.453	9	9.868	9	5.307	8	6.272	9	6.850	9
TR33	Manisa	5.722	13	6.787	11	8.048	11	3.996	13	5.036	11	5.586	11
TR41	Bursa	9.852	4	11.482	3	13.509	3	6.880	4	8.519	3	9.377	3
TR42	Kocaeli	10.320	2	11.785	2	13.862	2	7.207	2	8.744	2	9.622	2
TR51	Ankara	9.934	3	11.117	4	13.047	4	6.937	3	8.248	4	9.056	4
TR52	Konya	5.494	14	6.282	13	7.115	13	3.837	14	4.661	13	4.938	13
TR61	Antalya	8.475	7	9.738	7	11.110	7	5.918	7	7.225	7	7.712	7
TR62	Adana	5.802	12	6.675	12	7.661	12	4.052	12	4.953	12	5.318	12
TR63	Hatay	4.524	19	5.144	19	5.629	19	3.159	19	3.816	19	3.907	19
TR71	Kırıkkale	5.209	15	5.965	16	6.705	17	3.638	15	4.426	16	4.654	17
TR72	Kayseri	5.157	16	5.827	17	6.683	18	3.601	16	4.323	17	4.639	18
TR81	Zonguldak	7.475	9	8.877	8	10.247	8	5.220	9	6.587	8	7.113	8
TR82	Kastamonu	5.897	11	6.240	14	6.906	15	4.118	11	4.630	14	4.794	15
TR83	Samsun	5.037	17	5.815	18	6.794	16	3.518	17	4.315	18	4.716	16
TR90	Trabzon	5.032	18	6.129	15	7.004	14	3.514	18	4.547	15	4.862	14
TRA1	Erzurum	4.243	21	4.606	21	5.416	21	2.963	21	3.418	21	3.760	21
TRA2	Ağrı	2.992	24	3.427	24	3.867	25	2.089	24	2.543	24	2.684	25
TRB1	Malatya	4.372	20	5.100	20	5.583	20	3.053	20	3.784	20	3.876	20
TRB2	Van	2.727	25	3.159	26	3.392	26	1.904	25	2.344	26	2.355	26
TRC1	Gaziantep	3.860	22	4.524	22	5.098	22	2.695	22	3.357	22	3.539	22
TRC2	Şanlıurfa	3.430	23	3.756	23	4.183	23	2.395	23	2.787	23	2.904	23
TRC3	Mardin	2.701	26	3.391	25	4.159	24	1.886	26	2.516	25	2.887	24

Source: www.turkstat.gov.tr

Appendix 3: An Empirical Exercise

Table 7: Balanced Panel Data for 2004-2006

```
panelvar:  10, 21, ..., 123                                    n =         26
 datevar:  2004, 2005, ..., 2006                               T =          3
           Delta(datevar) = 1 unit
           Span(datevar)  = 3 periods
           (panelvar*datevar uniquely identifies each observation)

Distribution of T_i:   min      5%     25%       50%       75%     95%     max
                         3       3       3         3         3       3       3

     Freq.  Percent    Cum. |  Pattern
 ---------------------------+---------
       26    100.00  100.00 |  111
 ---------------------------+---------
       26    100.00         |  XXX
```

Table 8: Descriptive Statistics for Variables

Variable		Mean	Std. Dev.	Min	Max	Observations
gva_tl	overall	2.23e+07	3.02e+07	3385948	1.84e+08	N = 78
	between		3.03e+07	3889090	1.59e+08	n = 26
	within		4556353	366502	4.67e+07	T = 3
gva_pc~l	overall	7204.115	3053.984	2701	14914	N = 78
	between		2958.679	3092.667	13099	n = 26
	within		894.6549	5441.782	9098.782	T = 3
openness	overall	.1491322	.1746258	.0071566	.7135972	N = 78
	between		.1762133	.0075512	.7073123	n = 26
	within		.0157981	.0721243	.2069685	T = 3
metro	overall	.6153846	.6881326	0	2	N = 78
	between		.6972473	0	2	n = 26
	within		0	.6153846	.6153846	T = 3
pm_2002	overall	21.19231	11.21462	10	70	N = 78
	between		11.36317	10	70	n = 26
	within		0	21.19231	21.19231	T = 3
pm_rp_~2	overall	13.76923	7.355399	4	43	N = 78
	between		7.452826	4	43	n = 26
	within		0	13.76923	13.76923	T = 3
non_in~p	overall	2585.5	2110.869	706	12278	N = 78
	between		2138.485	710	12168	n = 26
	within		37.84635	2474.5	2695.5	T = 3
wap	overall	1859.962	1596.585	536	9219	N = 78
	between		1617.156	554.6667	9054.333	n = 26
	within		42.59575	1698.628	2024.628	T = 3
lf	overall	861.7821	744.4082	205	4295	N = 78
	between		753.3254	238	4167.667	n = 26
	within		37.2096	711.1154	989.1154	T = 3
emp	overall	770.7692	656.0098	183	3808	N = 78
	between		663.5934	219.6667	3679	n = 26
	within		37.82118	612.7692	899.7692	T = 3
emp_agr	overall	202.2564	138.4115	14	680	N = 78
	between		136.9193	15	617.6667	n = 26
	within		29.96318	133.9231	283.9231	T = 3
emp_ind	overall	200.4487	294.3733	15	1582	N = 78
	between		297.8521	16.66667	1549.667	n = 26
	within		15.62188	140.7821	239.1154	T = 3

emp_tra	overall	164.8333	176.0965	27	984	N =	78
	between		178.077	29.66667	954	n =	26
	within		11.05555	123.8333	194.8333	T =	3
emp_ser	overall	203.2949	218.3875	51	1234	N =	78
	between		220.7412	54.33333	1160.667	n =	26
	within		15.23325	144.6282	276.6282	T =	3
unemp	overall	91	94.15613	5	497	N =	78
	between		95.03263	10.66667	489.3333	n =	26
	within		8.291758	61.66667	114	T =	3
lfpr	overall	46.21795	6.842661	30	66	N =	78
	between		6.523082	34	63.66667	n =	26
	within		2.318755	40.55128	56.55128	T =	3
ur	overall	10.0641	3.909163	2	19	N =	78
	between		3.683017	3.333333	17.33333	n =	26
	within		1.438494	5.064103	15.0641	T =	3
er	overall	41.73077	7.379637	25	61	N =	78
	between		7.047786	30.33333	59.66667	n =	26
	within		2.465344	36.0641	53.0641	T =	3
not_lf	overall	998.1282	865.6179	263	4923	N =	78
	between		876.3998	316	4886.333	n =	26
	within		34.17209	909.1282	1084.462	T =	3
public~v	overall	107802.8	80605.7	19625	564478	N =	78
	between		68320.8	29792.33	292110.3	n =	26
	within		44167.72	-108736.6	380170.4	T =	3
schools	overall	2341.462	741.667	959	4487	N =	78
	between		744.2403	979	4168	n =	26
	within		102.7775	2013.462	2660.462	T =	3
teachers	overall	23107.81	14405.2	7625	83488	N =	78
	between		14581.7	7676	80737	n =	26
	within		637.6908	20083.81	25858.81	T =	3
classr~s	overall	19888.82	9960.857	7096	62686	N =	78
	between		10073.4	7401.333	60129.67	n =	26
	within		617.2301	17629.15	22445.15	T =	3
students	overall	556364.6	417857.4	132129	2499806	N =	78
	between		422885.9	132741.7	2411456	n =	26
	within		20429.87	465965.9	644714.9	T =	3
underg~s	overall	82577.19	162410.1	5226	923147	N =	78
	between		164017.8	5349.667	856022.7	n =	26
	within		13188.33	-4174.474	149701.5	T =	3
instru~s	overall	3284.744	4180.112	78	18788	N =	78
	between		4231.589	84	18147.33	n =	26
	within		179.1303	2761.41	3925.41	T =	3
hospit~s	overall	6787.692	6249.379	990	35153	N =	78
	between		6319.08	1194.667	33488	n =	26
	within		401.4124	4980.692	8452.692	T =	3
health~s	overall	11898.44	10002	2635	54895	N =	78
	between		10096.41	2899.667	49475.67	n =	26
	within		866.1915	8695.769	17317.77	T =	3

Table 9: Correlations

Table 9.a: Correlations for Data Set 1[34]

```
. corr  gva_tl  openness metro pm_2002  wap public_inv schools hospital_beds
(obs=78)

             |   gva_tl openness    metro  pm_2002      wap public~v  schools hospit~s
-------------+------------------------------------------------------------------------
      gva_tl |   1.0000
    openness |   0.7796   1.0000
       metro |   0.3253   0.5129   1.0000
     pm_2002 |   0.9305   0.7002   0.3227   1.0000
         wap |   0.9759   0.7503   0.3361   0.9775   1.0000
  public_inv |   0.2610   0.2425   0.0497   0.3596   0.3102   1.0000
     schools |   0.5286   0.3344   0.2303   0.7433   0.6351   0.4211   1.0000
hospital_b~s |   0.9514   0.7061   0.3463   0.9481   0.9729   0.2889   0.5874   1.0000
```

Table 9.b: Correlations for Data Set 2[35]

```
. corr  gva_tl pm_rp_2002 emp teachers students undergraduate_students instructors health_workers
(obs=78)

             |   gva_tl pm_rp_~2      emp teachers students underg~s instru~s health~s
-------------+------------------------------------------------------------------------
      gva_tl |   1.0000
  pm_rp_2002 |   0.7727   1.0000
         emp |   0.9655   0.8209   1.0000
    teachers |   0.9301   0.8279   0.9556   1.0000
    students |   0.9350   0.8524   0.9329   0.9504   1.0000
undergradu~s |   0.3443   0.0528   0.3343   0.3011   0.2534   1.0000
 instructors |   0.7841   0.5610   0.7484   0.8349   0.7235   0.3208   1.0000
health_wor~s |   0.9245   0.7228   0.9261   0.9657   0.8821   0.3187   0.9235   1.0000
```

Table 10: Some Estimation Results[36]

Table 10.a: Result for Trade Openness (Economic Institution)

```
Random-effects GLS regression                   Number of obs      =        78
Group variable: panelvar                        Number of groups   =        26

R-sq:  within  = 0.0365                         Obs per group: min =         3
       between = 0.6229                                        avg =       3.0
       overall = 0.6078                                        max =         3

Random effects u_i ~ Gaussian                   Wald chi2(1)       =     37.31
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
      gva_tl |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    openness |   1.17e+08   1.92e+07     6.11   0.000     7.97e+07    1.55e+08
       _cons |    4761970    4739845     1.00   0.315     -4527956    1.41e+07
-------------+----------------------------------------------------------------
     sigma_u |   18719878
     sigma_e |  5495371.4
         rho |  .92066081   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

[34] The variables in data set 1 are selected with the belief that they can provide signals for the presence of institutions in a given region.

[35] The variables in data set 2 are selected with the belief that they can provide signals for the quality of institutions in a given region.

[36] These estimations can be increased by introducing different variables into the regressions. This paper just shows some these estimations to try to maintain a linkage between the regional economic disparities and some of the institutional structures. All the econometric work were done with using the 10th version of the STATA.

Table 10.b: Result for the Number of Parliament Members (Politic Institution)

```
Random-effects GLS regression                   Number of obs      =        78
Group variable: panelvar                        Number of groups   =        26

R-sq:  within  =      .                         Obs per group: min =         3
       between = 0.8860                                      avg =       3.0
       overall = 0.8659                                      max =         3

Random effects u_i ~ Gaussian                   Wald chi2(1)       =    186.47
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
      gva_tl |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pm_2002 |    2509251   183756.8    13.66   0.000      2149095     2869408
       _cons |  -3.09e+07    4399696    -7.03   0.000    -3.95e+07   -2.23e+07
-------------+----------------------------------------------------------------
     sigma_u |  9937436.4
     sigma_e |  5544482.9
         rho |   .7626044   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 10.c: Results for the Number of Schools and Hospital Beds (Social Institutions)

```
Random-effects GLS regression                   Number of obs      =        78
Group variable: panelvar                        Number of groups   =        26

R-sq:  within  = 0.0707                         Obs per group: min =         3
       between = 0.8335                                      avg =       3.0
       overall = 0.8156                                      max =         3

Random effects u_i ~ Gaussian                   Wald chi2(2)       =    112.86
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
      gva_tl |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     schools |   12358.98   3500.237     3.53   0.000     5498.636    19219.31
hospital_b~s |   3221.782   462.9798     6.96   0.000     2314.358    4129.206
       _cons |  -2.86e+07    7630957    -3.74   0.000    -4.35e+07   -1.36e+07
-------------+----------------------------------------------------------------
     sigma_u |  7469369.9
     sigma_e |  3119258.9
         rho |    .851502   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

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